

THE RAILWAY GAZETTE

A Journal of Management, Engineering and Operation
INCORPORATING

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CONTENTS

	PAGE
Editorial Notes	333
Ten Years of Co-ordination of Transport	335
Transport Statistics	336
The Railways of Queensland	336
Bogie Design for High Speed	337
Letters to the Editor	338
The Scrap Heap	340
Overseas Railway Affairs	341
Why Locomotive Boilers Foam	342
Standard Military Railway Bridges—2	343
Personal	347
Transport Services and the War	349
Stock Market and Table	356

DIESEL RAILWAY TRACTION SUPPLEMENT

The April issue of THE RAILWAY GAZETTE Supplement, illustrating and describing developments in Diesel Railway Traction, is now ready, price 1s.

GOODS FOR EXPORT

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as indicating that they are available for export

NOTICE TO SUBSCRIBERS

Consequent on paper rationing, new subscribers in Great Britain cannot be accepted until further notice. Any applications will be put on a waiting list, and will be dealt with in rotation in replacement of subscribers who do not renew their subscriptions. Orders for overseas destinations can now be accepted

POSTING "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. THE RAILWAY GAZETTE possesses the necessary permit and facilities for such dispatch.

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas

TO CALLERS AND TELEPHONERS

Until further notice our office hours are: Mondays to Fridays 9.30 a.m. till 5.30 p.m.

The office is closed on Saturdays

ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards

Earl Lloyd George and Transport

THE death of Earl Lloyd George at the age of 82 has removed an out-standing and controversial figure from political life, in which he had taken an active part since 1890. Probably, he will be best remembered as Prime Minister, which office he held from 1916 to 1922, but he held also a number of other Government offices, including that of President of the Board of Trade from 1906 to 1908. At that time, statutory jurisdiction over the railways was vested in the Board, before being transferred to the Ministry of Transport when that department was created in 1919. While at the Board of Trade, Lloyd George gave evidence of his ingenuity as a mediator by his settlement of the railway strike of 1907, and he had a good deal to do with the introduction of conciliation boards. The Merchant Shipping Act, the Port of London Act, and the Patents Act, were three industrial measures which owed much to his initiative. The second of these, under which the Port of London Authority in its present form, was brought into being, has served at a prototype for similar undertakings, not the least of which has been the London Passenger Transport Board.

Accident Inquiries

When Lloyd George was President of the Board of Trade, he created a precedent by attending, in his capacity as President of the Board, the inquiry held into the Shrewsbury accident which occurred on October 15, 1907, on the London & North Western Railway. In the derailment, 14 passengers and 4 railway servants were killed. The Inspecting Officer (Sir Arthur Yorke) had intended to hold his inquiry in private as there was a possibility of a charge of manslaughter, but on the intervention of Lloyd George it was held in public, and the whole inquiry was carried out in a more formal manner than usual. The principle of holding inquiries in public did not originate from Shrewsbury, and unless, as at present, there was a possibility that criminal proceedings might result, no objection had been raised before 1907 to the presence of the public and press. The public, however, had shown little interest in these inquiries in earlier years, and the publicity given to the Shrewsbury accident resulted in more active interest, especially on the part of the press, not least by this journal, as our readers know. This may have given the impression in some quarters that there was a change of practice after the Shrewsbury inquiry, but that is not so. The Board of Trade also may have reacted more directly after this accident so far as publicity is concerned, but otherwise there was no change.

Higher Railway Charges

One of the most important points made at the annual meetings of the main-line railway companies was the likelihood of an increase in railway charges. Since then there has been some comment in the press and, as *The Financial News* pointed out recently, to argue that railway nationalisation would avoid the need for an increase is beside the point. Unless the Government confiscated the railways, the service of the 3 per cent. stock paid by the Government would have to be met out of net revenue. The alternative would be for the British public to subsidise the railways. It is not argued seriously that the railways would be more economically run if the State owned and operated them. The railways would not be the only bodies which have made increased charges to the public since the war. The State, in its "communications" services has taken the lead. The basic letter post charge has risen from 1½d. to 2½d., an increase of 66 per cent. Inland telegrams now have a minimum of 1s. instead of 6d.—a rise of 100 per cent. The rental for a private telephone has gone up by 25 per cent. In another sphere, the lowest fare on a London bus is now 1½d. against the pre-war penny—an increase of 50 per cent. From August, 1943, the Port of London Authority increased its port rate on goods by 100 per cent. The Mersey Dock & Harbour Board has raised its dues on ships by 60 per cent. and on its goods by 65 per cent. The dock and harbour dues at Hull are 100 per cent. over pre-war levels. The increase at railway ports is but 20 per cent.

Railway Costs and Charges

The average wages rates for male adults of the four main-line railway companies are now 93s. a week against 63s. 2d. in March, 1939. This is an increase of 46 per cent., which agrees fairly closely with the 44 per cent. for wage earners in all industries estimated by the Ministry of Labour last July. The increase in total earnings is much higher because of the incidence of overtime. The increase in railway fares and charges since the war has been only 16½ per cent. and there have been exceptions even to that advance. Any increase in rates and fares which the railways may have to seek, to ensure their solvency, will be in keeping only with the trend of prices and charges in the national economy generally. The actual increase will have

to be related to the volume of traffic the railways expect to secure in the post-war years, but the case for some increase already seems fairly obvious unless post-war traffics are a great deal more, or the post-war price level is a great deal less than present indications suggest. In this connection, a relevant factor undoubtedly will be the general transport arrangements in this country after the war. So far the Ministry of War Transport has given no clear indication of what may be expected. If the move for higher railway rates and charges helps to focus attention on the need for an early decision on this matter, it will have performed a useful service.

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Sir George Godfrey

Sir George Godfrey, whose death is recorded, and of whom a portrait and biography appear, on another page, was one of the best known and liked railwaymen in India, where he served for over 35 years. He was Agent—the equivalent of General Manager—of the Bengal-Nagpur Railway from 1911 to 1925, although during that period his services were lent to the Government of India from 1917 to 1919, as Member of the Railway Board and Coal Controller, both specially important posts during the last war. Although he took an engineering degree at Cambridge and all his earlier experience and service on the B.N.R. was on the engineering side, he was also eventually a sound transportation man, and was, in fact, the Traffic Member of the Railway Board. With a flair for general administration added to this experience, Sir George was an outstandingly able chief executive of his railway. He was, therefore, intensely respected by the large business community in Calcutta, a respect reflected in his election or appointment to the Bengal Legislative Council, Howrah Bridge Committee, and Council of State, India, not to mention the Bengal Chamber of Commerce and the board of at least one large business concern. His death, which tragically occurred within a week of that of his only son, will be greatly regretted by a very large circle of friends in both India and the United Kingdom.

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Some Notable Railway Families

From time to time on the British railways there have been instances of markedly successful families. The recent retirement of Mr. Alexander Eddy, Chief Legal Adviser & Solicitor of the L.M.S.R., brings to mind one instance of this kind. Mr. Eddy's father, the late Mr. E. M. G. Eddy, one-time District Passenger Superintendent, L.N.W.R., and later Assistant General Manager, Caledonian Railway, was the first Commissioner of Railways for New South Wales, and Sir Montague Eddy, Mr. Alexander Eddy's brother, is Chairman of the Buenos Ayres Great Southern and Western Railway Companies. All three of them received their early training on the London & North Western Railway, and each attained a high place in a different branch of railway work. Another prominent family associated with a constituent company—the Midland Railway—of the L.M.S.R., was the Tatloes. The late Mr. Frank Tatlow was General Manager of that company, and his father and two of his uncles were in the service; his cousin, the late Mr. Joseph Tatlow, who was for many years Manager and afterwards a Director of the Midland Great Western Railway of Ireland, also commenced work on the Midland at Derby. Another relative, Mr. A. H. Tatlow, who was Publicity Manager, South African Government Railways, from 1910-30, was for some years in British railway service, and was the son of a former Chief Accountant of the Lancashire & Yorkshire Railway. The Towles are another striking example. They made the former Midland Railway world-famous for its hotel and restaurant-car services and pursued a policy of enterprise and imagination which also characterised the first twenty years of the L.M.S.R. Three generations of Towles have distinguished themselves as hoteliers both with and apart from railways. The pioneers were Mr. and Mrs. William Towle. Mr. Towle became Sir William after his wife's death. Their sons, daughters, and grandson, Mr. Arthur Towle, Sir Francis Towle, Mrs. Muggeridge, and Mr. Geoffrey Towle have all enhanced the Towle tradition.

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British Railway Investments in Colombia

The compilation of British investments in Colombia, which is made annually by *The South American Journal*, shows in respect of 1944 a more satisfactory result than for any recent year since 1932. This is largely the result of the resumption of interest payments by the Government on its foreign debt. The total British capital invested in Colombia last year was £7,714,689, on which £279,251 or 3.6 per cent. was received in interest. The amount on which no interest was paid was £694,420. The rate

of interest compares with 2 per cent. for 1943, when the amount on which no remuneration was forthcoming was £3,013,920. The improvement in the yield has been greatest in Government bonds, which received an average of 3 per cent. for 1944, as compared with 0.8 per cent. for 1943. There are only three British-owned railways operating in Colombia. Of these the Barranquilla Railway & Pier Co. Ltd. no longer owns a railway, as it has sold it to the Government, and is now more of a trust company receiving instalments of the purchase price. The Colombia Railways & Navigation Co. Ltd. has ceased all transport operations. Only the Dorada Railway Co. Ltd. still operates a railway and last year was able to pay its debenture interest. The total amount of capital invested in railways is £1,970,931, on which interest of £55,290 was received, equal to 2.8 per cent., which compares with 2.7 per cent. for the previous year.

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Mr. Ernest Bevin on Transport

The annual luncheon of the Mansion House Association on Transport has become a well-established occasion for the meeting of representatives of the providers and users of transport. At the recent gathering, a report of which is given elsewhere in this issue, Mr. Ernest Bevin, Minister of Labour & National Service, was the principal guest and speaker. He indulged in some good-humoured tilts at the transport industry, and put his own viewpoint on some matters quite bluntly. He avowed himself still wedded to nationalisation as a policy, and disclosed that he had been opposed to the inclusion of the railways in the civil aviation plans of the Government. He also had some strong views on dock ownership and management; at times he was almost as vehement on this matter as he used to be in the days when he earned the designation of "the dockers' K.C." Mr. Bevin is so dissimilar to the usual representative of bureaucracy that at times it seemed incongruous to hear him arguing for the alternative to private enterprise. One felt tempted to ask, when he declared that dock-owning and operating needed a different mind and outlook from that of the railways, whether he really believed that what he sought would be found in Whitehall.

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Royal Engineers' Larger Bridges

Through-truss spans up to 150 ft. in length, the method of launching them in the field, and the heavy-type steel trestle piers and abutments usually associated with them, form the subject of the second part of our "Standard Military Railway Bridges" article on pages 343-6 in this issue. We referred briefly to and illustrated a bridge in Italy reconstructed with this type of superstructure in our January 19 issue, but details of it had not then been released. Realising how greatly all other considerations have to be subordinated to speed of erection in the field, it is remarkable how nearly approaching orthodoxy is the design of these truss spans, and that this type of bridge, capable of carrying 18/20 B.S. unit loads, weighs under 1 ton a foot run. The sectional method of assembly, and seven different lengths of span built up from standard parts reveal most careful planning, backed by long experience in practice and design, remarks which also apply to the method of launching devised for this size of bridge. The details of the heavy trestling also make for extreme simplicity in erection, not the least interesting feature of which is the special climbing derrick, details of which have, however, not yet been released.

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Aluminium Alloy in Wagon Construction

An experiment is being made by the Chicago, Burlington & Quincy Railroad of the United States by the use of aluminium alloy in wagons which are subject to severe service conditions. The design selected for the experiment is a 55-ton bogie hopper wagon, normally used for carrying high-sulphur coal from mines in Southern Illinois. The original steel underframe and steel superstructure frame are retained, but all the parts of the car that are in contact with the load have had plating of aluminium alloy substituted for the previous steel plates. One object of the test is to see how aluminium will stand up to the strongly corrosive conditions produced by a combination of sulphur in the coal with moisture, which tend considerably to shorten the life of steel plating. Another is the economy in tare weight effected by the substitution. The original all-steel wagon, with a normal load capacity of 55 tons and a limit loading of 62 tons (of 2,000 lb.) weighed 44,700 lb. (22.35 tons of 2,000 lb. or 20 tons of 2,240 lb.), but the aluminium-plated wagon weighs 36,800 lb. only. This reduction in tare can be utilised to increase the capacity of each wagon by nearly 4 tons. As compared with the previous standard wagons, the fitting of the new "AB" brakes and other equipment details has added somewhat to the weight, as has also the use of multiple-wear steel wheels instead

of an earlier type, but some compensation has been obtained by substituting hollow tubular axles for the solid type, so that the economy in weight by the use of aluminium is maintained almost in its entirety. It will be noted that if the aluminium-sided wagon is fully loaded, the proportion of tare to paying load is only 36 per cent.—a remarkable figure.

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Foaming in Locomotive Boilers

Foaming and priming have been troubles in locomotive boilers for generations; and in spite of the research on boiler water treatment many factors are still but little understood. In recent years many rival organisations have had their particular processes adopted by various railways at home and abroad; and in numerous cases it has been found that although scaling has been notably reduced, troubles due to foaming have greatly increased. The latest opinion seems to suggest that it is not wise to soften to zero hardness, but to some nearby low figure of concentration, at which optimum results—and practically no foaming—will be obtained. So important is the matter now becoming that a special sub-committee of the American Railway Engineering Association recently investigated, and has now reported on, the phenomenon of foaming, and we publish an abstract of this report elsewhere in this issue. The experimental work was of a high order and has yielded some valuable information, especially on the apparent mystery of the bad results attendant on the mixing of two different waters, each of which might be satisfactory when used alone. Foaming inhibitors were also examined, and the mechanism of bubble formations was examined at the Massachusetts Institute of Technology. Too small a steam space for modern boiler conditions, according to the report, constitutes the reason for much of the present priming troubles.

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Locomotive Steam Dome Location

Modern methods of boiler water treatment in some cases have proved to be rather mixed blessings in that, although eliminating scale, they have shown an increased tendency to prime, due to the introduction of alkaline sodium compounds. Consequently, increased attention is now being given to the location of the dome, in an effort to reduce the amount of carry-over. There seems to have been no definitely accepted position for the dome in British locomotive practice; we recall the early Sharp locomotives of 100 years ago which carried their domes as far forward as it was possible to be, and the contemporary "haystack" fireboxes on various lines, with the steam space vertically above the smokebox. Forty or fifty years later, there was still no decision; the Holden boiler on the Great Eastern engines of the early 1890s had the dome well forward, and on the Brighton line the Stroudley boilers had the dome only a short way in front of the firebox tubeplate. On many railways, however, such as the L.N.W.R., Midland, and Lancashire & Yorkshire, a middle course was invariably favoured. For engines working mainly in forward gear over fairly level track, a dome placed well forward would seem to be best. Where heavy grades are encountered, it is best located immediately above the "rocking point," to avoid restriction of the steam space by the sloping water line which will be unavoidable on the gradient. The Great Western has avoided the problem neatly by having no dome at all on its principal types, and making the steam space, in conjunction with a taper boiler, large enough to render a dome unnecessary.

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Prophets Without Honour

In spite of unfavourable travel conditions, interest in railway operation appears to be spreading. Among many people who have received technical training in the Forces, and who have made the frequent and lengthy journeys inseparable from Service life, we find a disposition to ask questions calculated to set pre-war railway enthusiasts searching anxiously through their reference books. To know the details of pre-grouping liveries, or to have travelled by special half-day excursion over some normally disused spur, will no longer save the one-time oracle from being toppled off his perch if he cannot explain, for example, how a railway carriage dynamo is made to charge its accumulators in both directions of running, or why . . . but what need is there to cite more of these elementary conundrums? We feel today that even a scheme of widespread main-line electrification would by no means reduce the number of railway enthusiasts so seriously as has been supposed. In fact we can envisage a domestic scene, not far distant, with the sons of the house sitting on the floor surrounded by tinplate track, as for generations past, but discussing the relative merits of direct and alternating current motors for traction purposes, while their father (who was accounted a dog in his day for having ridden three hundred yards on a footplate) hides behind his newspaper and hopes not to be drawn into the argument.

Ten Years of Co-ordination of Transport

THE need for co-ordination of all forms of inland transport has been acknowledged for many years and practically since the grouping of the railways in this country into four main-line systems in 1923, an endeavour has been made, with varying degrees of success always falling short of that desired, to achieve this object. The desirability of co-ordination within the transport system in this country will be greater than ever after the war, and on the form which that co-ordination takes, will depend in large measure the practicability of achieving an efficient and truly economic transport service to the nation, which will be indispensable in the conditions of the time. Perhaps because the need is so plainly discernible, although the means by which it may be achieved have proved so elusive, a great deal has been spoken and written on this subject in recent years. When, on the occasion of the celebration of the coming-of-age of the four main-line railway companies of Great Britain, at the end of 1943, we dealt at length with changes in transport since January 1, 1923, a great deal of space was given to this matter, and the degree of success which had attended it during that time. There has been a number of other articles and papers recently dealing with the same subject.

Sir Cyril Hurcomb, Director General of the Ministry of War Transport and Past President of the Institute of Transport, therefore, was treading familiar ground when he chose as his subject for the commemorative address to the Institute on the occasion of the 25th anniversary of its first public meeting, the co-ordination of transport in Great Britain during the years 1925-1944. It was on March 22, 1920, that the first Minister of Transport, Sir Eric Geddes, delivered to the newly-formed Institute of Transport his inaugural address at its first public meeting. There have been some striking changes, of course, in the development and growth, and also the national appreciation, of transport during those 25 years; indeed Sir Eric Geddes found it necessary to comment on the general lack of consciousness of the public's dependence on transport which had been shown before the 1914-18 war. At the present time such comment would seem strange, for it has been acknowledged freely during the present conflict that a high place has been taken in the waging of the war by all arms of the transport service. Sir Cyril Hurcomb, in his recent address, dealt at some length with the efforts which have been made during the past 10 years to co-ordinate the various forms of transport and, coming to more recent days, he said that the White Paper on civil aviation was a striking and encouraging sign of a determination to give practical application to the principle of co-ordination in a new and difficult field. In his view, new facilities such as would be provided by the aeroplane would create much new traffic and not merely abstract passengers or freight from the agencies which now carry them. He did not expect to see for many years, at least, a situation parallel to that which arose between road and rail as a result of the first intrusion of the internal combustion engine into transport. The war had demonstrated the capacity of the railways to deal with greatly increased traffic and the disproportionate extent to which net revenue varied with volume of traffic, and also the mobility of road transport.

It had also shown the ability of coastwise shipping to move large quantities of bulk traffic and to re-distribute imports, and the usefulness of canals for dealing with suitable traffics. Experience had been gained differentiating between long-distance and other road haulage, but it could not be claimed that war experience had anywhere revealed a clear functional division in transport. Allocation of traffic had been practised on a considerable scale at various points in the wartime organisation but detailed allocation of traffic had not been practicable, nor indeed had it been easy to find any fixed principles on which to allocate at all. He confessed that wartime allocation of traffic had not been based on principles or methods likely to be applicable to ordinary conditions.

The war had made it clear that all forms of transport were essential to the life of the country. Without a well-maintained railway system our economy could not go on, although some branch lines might be closed without serious detriment and perhaps a few, which had to be maintained solely or mainly on that account as having a claim to contribution from the State. "Equalisation" of track costs for all competing undertakings and other methods for securing that all traffic made its contribution to the fixed charges of the transport industry as a whole had been canvassed but Sir Cyril Hurcomb's view was

that the practicability of these ideas could not be tested by the financial arrangements with the different undertakings for the purposes of war control. The ordinary financial incentives governing the flow of traffic largely had become inoperative, but their force would revive. An ideally co-ordinated system of transport would be one in which each branch performed those functions for which it was technically best suited in relation to public demand. The field of each branch would be determined by its technical efficiency and the preference of the public for it at a price corresponding to its true social cost. In the absence of compulsory allocation of traffic, rates would influence largely the choice of the form of transport to be used, and it remained to be seen whether the problem of charges would have to be dealt with separately, and in advance of other features of the post-war situation or as part of some larger measure.

All forms of transport during the war had been brought into new contacts with one another and set in combination to a common task both at the centre and at various levels throughout the country. How far the experiments were made and the detailed machinery devised to meet a temporary and exceptional state of affairs would provide anything of permanent value towards a real economic co-ordination of transport, it was not yet possible to judge. War controls had been designed to meet war conditions; but even if the direct contribution was not great, the habit of co-operation in times of stress, added to the knowledge and experience gained, surely would be found to have contributed much. Sir Cyril Hurcomb thought that with all forms of transport conducted under one Minister, charged with the responsibility for all surface transport, greater agreement on both principles and methods might be secured, and there might be fairer prospects of that harmony which Sir Eric Geddes desired twenty-five years ago.

Transport Statistics

RECENTLY we have heard a great deal of talk about the need for comprehensive statistics of British trade and industry. The Government is committed to the establishment of a central statistics office in peacetime and has approved in principle proposals for training selected civil servants in the collection and use of facts and figures bearing on after-war problems. One association of civil servants has made representations on this question of training. Evidently the staff employed in Government departments recognises the flaw in the present organisation and sees the advantages which would accrue from the existence of a well-designed statistical apparatus. This is all to the good, but it would be more satisfactory if some of the gaps in our statistics were filled without delay. We have repeatedly referred to the lack of adequate transport statistics in this country and have pointed out that American investigators in the transport field have far more information at their disposal than is available here. The passing of each war year leaves Great Britain further behind the United States, and, in view of the vital importance of transport questions, this is unfortunate.

We return to the subject because a belated mail has just brought a bulletin published in October last by the Association of American Railroads. Based mainly on official summaries of the Interstate Commerce Commission, the bulletin contains a wealth of detail about the operations of the U.S.A. railways in 1929—the record year before the war—and in the years 1936 to 1943. The comparative statistics are marshalled in 12 statements, measuring 17 in. across and 11 in. deep, which are printed distinctly on superfine paper. We do not propose to comment on these tables, as previous articles have reviewed the 1943 results of the U.S.A. railways and before long we hope to discuss their 1944 operations. There is, however, a thirteenth statement, referring to 1943 only, which gives a clear idea of the Americans' style of approach to statistics and of the broad-minded view they take about circulating information.

The statement analyses the 1943 freight traffic by commodities in a thorough manner. Wagon-load traffic is divided into five groups of commodities as shown below:—

1. Products of agriculture	...	...	...	42 commodities
2. Animals and products	...	...	...	22 "
3. Products of mines	...	...	...	18 "
4. Products of forests	...	...	...	12 "
5. Manufactures and miscellaneous	...	...	...	62 "

Then for each of 148 commodities are given: (a) the number of wagons originating, (b) the tonnage originating, and (c) the gross freight revenue. In the case of the remaining 8 commodities a note explains that data are "omitted in order to avoid revealing

information concerning strategic and critical materials" such as copper, lead, zinc, rubber, aluminium, alcohol, sulphuric acid and explosives. Particulars of these traffics, however, are included in the totals of the statement.

In sharp contrast to the American procedure, during the war our Ministry of Transport ceased to publish all railway returns, including No. 16, which gave details of some 40 commodities. The return was instructive as it listed the tonnage, receipts, and average receipt per ton for each sort of traffic. To take one or two examples from the 1937 return, our railways carried 12,411,000 tons of iron ore for an average receipt of 3s. 2d. a ton; 899,000 tons of potatoes at an average charge of 15s. a ton, and 563,300 tons of paper at an average charge of 23s. 9d., collected and delivered, with a further 201,300 tons of paper at an average charge of 14s. 1d., station to station. How small these tonnages look beside the American quantities originating in 1943:—

Iron ore	...	...	104,142,000 short tons.
Potatoes	...	...	5,234,000 "
Newspaper paper	...	...	1,358,000 "
Other printing paper	...	...	2,270,000 "

The two last figures are noteworthy because the Americans believe that they are suffering like ourselves from a paper shortage! Even for high-class traffics the volume of movement in the States is impressive. Nearly 151,000 wagons were loaded in 1943 with 3,513,000 tons of oranges and grapefruit, which bore freight charges of over 70 million dollars, and 18,700 wagons, carrying 327,000 tons of fresh grapes, earned a revenue of 10½ million dollars. But perhaps the most astonishing performance was the haulage of 8,241,100 wagons containing 465,928,000 tons of coal, more than twice the coal output of Great Britain in 1938. Steam locomotives on U.S.A. railways consumed in 1943 fuel equivalent to nearly 151½ million tons of coal. The quantity is gigantic, but then the President of the New York Central estimates that the railways are performing virtually three-fourths of the transport service in America, local cartage excluded. The efficiency with which they are carrying on is due in part to the intelligent use of statistics covering every item of equipment, maintenance and operation, and sectionised to suit the organisation of the individual companies. The A.A.R. bulletin sums up those enormous masses of figures for all Class 1 railways and also condenses into two statements sufficient information about property investment, income and dividends to bring out the financial position of the railways before and during the war. The circulation of the bulletin amongst influential people in the States should help to improve relations between the railways and the public whom they serve.

The Railways of Queensland

PRINCIPALLY as the result of demands by the fighting services for railway transport, new haulage records were established by the Queensland Railways during the financial year ended June 30, 1944. The report of the Commissioner for Railways covering that year contains a considerable amount of interesting detail of the operations, noteworthy among which is the fact that the number of tons hauled a distance of one mile on the 6,467 route miles of the 3-ft. 6-in. gauge system, as expressed in gross ton-miles, was 4,941,969,668, necessitating the running of 19,544,360 train miles. The record gross ton mileage, which was an increase of 48,652,219 compared with the previous year, was achieved with a reduction of more than 100,000 train miles and was the result of additional passenger travel. The number of passenger journeys on the main system was 37,641,152, a total never previously reached, and represented an increase for the year of 4,771,889. The number of passenger journeys on the uniform gauge railway and the main Queensland system combined was 38,153,717, an increase of 4,890,439 or 14·7 per cent. Compared with the year 1938-39 the increase in passenger journeys is no less than 54·85 per cent.

Goods and livestock paying tonnage on the main Queensland system was 5,997,811 in 1943-44, which has been exceeded only by the tonnage carried in the previous year, compared with which it represents a decrease of 233,990 tons. Every ton of paying goods and livestock, however, was hauled an average distance of approximately two miles further than was the case in 1942-43, the length of average haul having increased from 212·39 miles to 214·37 miles, the longest average haul yet recorded. Including departmental traffic, the total tonnage carried was 7,062,756. The average net and gross loads of goods and livestock trains were the largest ever attained, 113 tons and 295 tons respectively. The greatest volume of traffic was on the 1,043 miles of coastal railway between Brisbane and Cairns.

only 40 miles of which is double track; the balance is single track with loop lines at crossing stations. Approximately 54 per cent. of the total gross ton-miles for the whole State were accounted for on this section of line on which the gross steam ton-miles for the year under review were 125.44 per cent. greater than during the year 1938-39 and were only 10.23 per cent. less than the 1938-39 steam gross ton-miles for the whole State.

The following percentage increases give some idea of the year's operations compared with those of 1938-39, the last pre-war year: Gross ton-miles increased by 66.37 per cent.; net ton-miles of paying goods and livestock, 69.96 per cent.; train miles, 41.39 per cent.; passenger journeys, 53.33 per cent.; average haul per ton of paying goods and livestock, 45.27 per cent.; and average net load of goods and livestock trains, 13 per cent. The tonnage of goods and livestock, paying and departmental, carried over the main Queensland system and non-transhipped tonnage carried over the South Brisbane—Border Loop "uniform-gauge" railway amounted to 7,631,982, which was 100,121 tons less than that conveyed during 1942-43.

Gross earnings on the main Queensland system for the financial year ended June 30, 1944, amounted to £15,659,891, a decrease on those of the preceding year of £1,488,305. This decrease was almost wholly the result of two reductions, each of 5 per cent., in freights and fares operating respectively from March 1, 1943, and August 1, 1943, and of even greater reductions in the charges for the conveyance of personnel of the fighting services, of materials and goods for such services, and of materials for departments closely allied to the fighting services. Working expenses amounted to £12,719,237, or £1,725,395 more than in the previous year. The expenditure included an amount of £1,750,000 transferred to the Treasury for payment into the Post-War Reconstruction & Development Trust Fund to meet the cost of deferred and accruing maintenance of rolling-stock, track, etc. This amount was £500,000 greater than that transferred during the preceding year. The expenditure was further increased over that of the previous year, principally by the inclusion of amounts of £424,000 for the part purchase of locomotives and the purchase of rolling-stock for war purposes, £89,560 for special works to facilitate movement of war traffic, £368,150 additional payment for overtime and Sunday time, £306,800 additional cost of stores and fuel, and £334,950 representing basic wage, war loading, and automatic increases. Reductions under other headings of expenditure amounted to £428,825.

The percentage of working expenses to earnings was 81.22, compared with 64.11 in the previous year. It is stated, however, that this does not indicate a decrease in efficiency, as the reduction in earnings was due almost wholly to reductions in freights and fares, and it is impossible in such circumstances to make a corresponding reduction in working expenses. Of the increase in working expenses, more than £1,000,000 was due to additional payments to reserve fund, cost of locomotives and rolling-stock for war purposes, and of special work necessary to facilitate movement of war traffic, while other items contributing to the increase were in the main beyond the control of the management. The net earnings for the year were £2,940,654. This amount, which is £3,213,700 less than that for 1942-43, represents a return on capital (opened lines) of £7 6s. 3½d. per cent. After payment of interest charges on gross capital, which at 3.81 per cent. amounted to £1,583,193, there remained a net surplus for the year of £1,357,461.

♦ ♦ ♦ ♦

Bogie Design for High Speed

SOME interesting conclusions as to the ideal design of bogie for high-speed running appear in a paper contributed to the 1943 Year Book of the Car Department Officers' Association of the United States by Mr. K. F. Nystrom, Mechanical Assistant to the Chief Operating Officer, Chicago, Milwaukee, St. Paul & Pacific Railroad. The subject of the paper was a discussion of high-speed bogie design for goods wagons, in view of the inevitable post-war increase in freight train speeds, but the author drew largely on his company's experience in designing bogies for high-speed passenger work; this is now considerable, for the "Hiawatha" streamline trains have been in service since 1935, and their schedules daily demand speeds up to 100 m.p.h. with both diesel-electric and steam haulage.

In Mr. Nystrom's judgment, the line of demarcation between low speed and high speed operation, from the coach design point of view, is not 60 m.p.h., as is generally held, but something more in the region of 80 or 85 m.p.h. Bogies that have been

tested by the Milwaukee in freight wagons have exhibited good riding qualities at 80 m.p.h. or lower, but have shown themselves entirely unsuited to speeds above 85 m.p.h.; in some of the tests the shocks recorded were doubled in intensity as speed increased from 80 to 90 m.p.h. Up to 80 m.p.h. the amplitudes of body swing were within reasonable limits, but at 90 m.p.h. the body of the box wagon under test was becoming unstable. In this connection it was pointed out that from time to time bogie box wagons get marshalled in passenger trains, and travel without apparent risk at speeds up to, say, 75 m.p.h., but no assumptions as to the suitability of these wagons for high speed can be built on occasional runs, especially as the wagons have not been under observation, and no one can say how near to disaster such running may have been.

In its experiments the Milwaukee has proved that, given equal conditions of springing and of maintenance, a six-wheel bogie gives slightly better riding in both vertical and horizontal planes than a four-wheel bogie, and has better braking qualities also; but the gain is not considered to be worth the increase in weight, first cost, and cost of maintenance. A high-speed bogie so designed that it loses its superior qualities after a little of the wear that develops so rapidly with high-speed equipment is far from ideal; also it is essential that adjustments to take up the effects of wear and high-speed operation shall be as simple as possible, so that the maintenance staff may be able to keep the bogies in a perfect riding condition with a minimum of labour and trouble. In the design of passenger-car bogies, the Milwaukee for this reason changed from elliptic or leaf springs to coil springs. The former are liable, by reason of corrosion, to develop friction between the leaves that goes far beyond damping requirements, unless they are kept well oiled and graphited constantly, whereas coil springs remain constant in their effect throughout their life.

The introduction of coil bolster springs, however, changes the duty and purpose of the swing hangers. With an elliptic spring bogie, the lateral motion is provided by the swing hangers, and the slight motion that the elliptic springs allow between the spring plank and the bolster tends to damp out the pendulum motion of the swing hangers. But in bogies equipped with coil bolster springs, the springs themselves perform the same duty as the swing hangers in the elliptic spring bogie, so that the only duty left to the swing hangers to perform is a slight counter-swinging, in order to damp out harmonic transverse motion of the large bolster coil springs. It is regarded as fundamental in bogie design for high-speed work that the natural frequency of the springing system should be made as low as possible consistent with maintaining stability of the coach body, and keeping within reasonable limits the vertical movement of the couplers.

Nevertheless, Mr. Nystrom added, his company did not yet claim to have developed a satisfactory lateral device even for high-speed passenger coaches; the swing hangers now used leave a great deal to be desired. They can be designed to give good lateral riding at certain speeds, and in certain track conditions, but as the speed changes from this optimum value they allow the coach body to swing as a pendulum, and also allow one coach to influence the riding of another. It is regarded as important in passenger cars that the centre-line of each bogie should be equidistant from the centre of gravity of the car; the fact that dining cars with the kitchen in one end, and other cars unevenly weighted by the equipment that they contain, exhibit poorer riding qualities than symmetrically-arranged cars, adds point to the contention. Mr. Nystrom suggested that in a dining car with a kitchen at the end the bogie at the heavy end should be moved away from, and at the light end towards, the centre of gravity of the car, to improve the riding.

Another important requirement is that in wheels for high speed equipment the treads shall be concentric within 0.10 in., and that the treads shall not be permitted, by uneven wear, to develop sharp local tapers. It has been found by experiment that one of the principal factors in causing bogies to "hunt" at speed, is a short and sharp taper close to the throat of the main flange of the wheels, even if the extent of the taper be no more than 1/16 in. No bogie design tried by the Milwaukee has given good riding at high speed if the wheels have been in this condition, and the only way to restore such wheels to good riding qualities is by re-turning or grinding them. In any future plan for high-speed operation it will be essential to make provision for maintaining the wheels of the equipment in a truly concentric condition. Comprehensive air-brake improvements also will be necessary in high-speed freight operation, including a considerable increase in train-line pressures.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Combined Excursion and Dance

The Passenger Manager (Southern Area)
L.N.E.R., Liverpool Street, Station,
London, E.C.2. March 19

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In your February 2 issue you illustrated an early railway ticket for combined excursion and dance at Rye House dated 1855.

I also have a similar ticket dated exactly a year earlier issued, according to the initials on both, by the same booking clerk.

The coincidence that has occasioned my writing is that the one you illustrated was "recently discovered as packing in a piano." My ticket came into my possession over 30 years ago and had also been used for packing in a piano.

It is also interesting to note that the trip in 1854 was in the nature of an experiment—only one train; the following year it mentions two "special trains" at least on the down journey.

Yours faithfully,

W. R. JENKINSON

Bradshaw's Serial Number

Northwood, Middlesex. March 15

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—It may be of interest to note that April of this year is the centenary of the jump of 100 in the serial number of *Bradshaw's Railway Guide*. The monthly *Guide* was first issued in December, 1841, and the issue for March, 1845, had the correct serial number of 40, but that for the next month was numbered

that as the printed matter in the *Guide* was on the increase "looking around for something else to increase, the publishers improved the serial number by the addition of 100 so that the issue for April, 1845, was numbered 141."

I believe that the true explanation is that the number was increased to make the *Guide* appear to have been longer established, and therefore more likely to attract matter for its advertisement section. The subject is dealt with in some detail in Mr. Charles E. Lee's "The Centenary of Bradshaw" (p. 17), published in 1940.

Yours faithfully,

REGINALD B. FELLOWS

Re-Employment of Railway Staff in the Forces

London, W.14. March 19

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Your correspondent, "Railway Fan," in your issue of March 16 raises an interesting point in the example of the junior clerk now in the Forces.

Whatever goodwill may exist on the part of the railway companies, I can assure your correspondent that the ex-clerk will never have the opportunity of earning his living on the footplate in this country; the railwaymen's unions will see to that.

I have not seen the contribution on re-employment of ex-Forces men in the railways referred to by your correspondent, but I should be very inclined to take any hope the contribution might have offered to such men with some scepticism.

It is not, and never has been, the policy of British railways to encourage re-employment of those who have once left them to seek wider knowledge and experience elsewhere.

This attitude, coupled with the nepotism that exists among British railway personnel, accounts for their lack of progress in every sphere of railway operation which is so noticeable to the railway man from overseas, especially the Americans.

This is not to decry the part that British railways have played during the present war, but your excellent journal frequently gives prominence to some innovation which for years has been a commonplace in other countries.

Yours faithfully,

BRANCHUS

Light Alloys for Rail Vehicles

Wrought Light Alloys Development Association,
Union Chambers, 63, Temple Row,
Birmingham, 2. March 27

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—We have read with interest the abstract of the paper by Mr. T. A. Eames, on "Refrigerated Transport by Rail," published in your March 23 issue, and note that you mention a point of some importance in this paper, namely, the necessity for attention in re-designing refrigerated vehicles so as to reduce the weight. We would draw attention to the advantages which may be gained in this connection by using certain of the light alloys, both for the vehicle itself, and for the refrigeration equipment. Aluminium and some of its alloys have proved particularly useful in refrigerating plants, and when used in place of ferrous metals or copper-base alloys, the saving in weight ranges from 30 to over 50 per cent.

With regard to the use of aluminium alloys for the structural members and the covering of railway wagons, we would mention that considerably more progress has been made in this connection in the U.S.A. and on the Continent than in this country, but there is a certain amount of information available here. We should be very pleased to assist any concerns interested in reducing the weight of refrigerated vehicles at any time.

Yours faithfully,

E. G. WEST,
Director

Compulsory Tunnel

Hurstpierpoint,
Sussex. March 17


TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In a guide to the London & Brighton Railway, published before the opening of the line, there is an item headed "Compulsory Tunnel." This refers to the short Patcham Tunnel (480 yards) north of Preston Park Station.

The anonymous writer states that the London & Brighton Railway had proposed to pass in a cutting the portion of railway where the tunnel was constructed. The land involved was the property of a Major Payne who opposed the Bill of the L.B.R. on the grounds that a cutting on the site would spoil his estate. He obtained a clause in the Act, requiring a tunnel to be constructed in place of the proposed cutting. Objections

ENTERED AT STATIONERS' HALL.

No. 141. 4th No. (APRIL), 1st, 1845. Price 6d.



BRADSHAW'S

MONTHLY

RAILWAY AND STEAM NAVIGATION

GUIDE,

FOR GREAT BRITAIN, IRELAND,

THE CONTINENT, AND FOREIGN PORTS,

CONTAINING A CORRECT ACCOUNT OF THE HOURS OF DEPARTURE OF
THE RAILWAY TRAINS, HER MAJESTY'S MAILS, AND
BRITISH AND FOREIGN STEAM VESSELS,

WITH A
LIST OF PLACES, AND TO WHICH TRAVELLERS AND VOYAGERS RESORT, AND
OTHER USEFUL MERCANTILE INFORMATION.

ILLUSTRATED WITH A

MAP OF GREAT BRITAIN,

SHOWING THE PROJECTED AND WORKING LINES OF RAILWAY.

London:

PUBLISHED AT BRADSHAW'S RAILWAY INFORMATION OFFICE,
59, FLEET-STREET, W. J. ADAMS, AGENT;

To whom Advertisements and Communications may be sent;

AND SOLD BY ALL BOOKSELLERS AND RAILWAY COMPANIES.

BRADSHAW AND BLACKLOCK, PRINTERS, 27, BROWN-STREET MANCHESTER.

141, and this figure was used as the basis for subsequent serial numbers. In a letter which was published in *The Times* of July 5, 1933, Henry Blacklock & Co., the proprietors of the *Guide*, admitted that the extra 100 was still in the serial number and wrote "How the mistake arose is a mystery and our records of the past history of *Bradshaw* throw no light on it." In an article on "Bradshaw" in *The Railway Magazine* of March, 1898, by Mr. John Partington, it is stated that Mr. William Bradshaw could give no definite information as to the error in numbering but "supposed that a printer spilt the type and improperly re-composed it." In "The History of Bradshaw," published in 1939, Mr. Royde Smith humorously states

of this kind were not uncommon in the early days of railway promotions. In many cases they were overcome by the railway paying an extortionate price for the land required for the railway. A settlement on this basis was usually the *raison d'être* for the opposition of the landowner. In some cases compromises were made upon the railways erecting a screen or planting a row of trees parallel with the course of the line. Such agreements necessitated the railway purchasing land additional to that required for the railway.

In the same guide it is stated that "Hassocks or Ditchling Gate" station would be in a cutting. It is, however, on an embankment; the cutting commences south of the station.

The writer also asserted that when the line to Hastings was built, Burgess Hill would be an important station. He evidently thought that the junction would be south of that station, instead of about $\frac{1}{2}$ mile north of it. The construction of the Keymer Junction-Lewes line necessitated the provision of a bridge to reach Inholmes Park, Burgess Hill, the residence of Mr. Copestake, head of an important London firm of wholesale drapers. This brick bridge was demolished about 12 years ago.

Yours faithfully,

G. A. SEKON

Queensland Locomotives

Beyer, Peacock & Co. Ltd.,

Abbey House, S.W.1. March 29

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—With reference to your correspondent's notes under the heading "Queensland," in your issue of March 30, we should like to draw your attention to a small inaccuracy, which, if not corrected, might be misleading. The term "Beyer-Garratt" is used. The general implication of this term is an articulated locomotive of the "Garratt" type designed and/or manufactured by Beyer, Peacock & Co. Ltd. In the case under reference, an urgent demand arose in Australia, and owing to other heavy war commitments our company was at that time in the unfortunate position of being unable to meet this need. After cable exchanges, Australia decided to design these engines from such information as was available locally and to manufacture them in Australian shops. The correct designation is, therefore, "Garratt" locomotives.

Yours faithfully,

H. WILMOT
Managing Director

Publications Received

Industrial Record, 1919-1939. A Review of the Inter-War Years. Published by Cadbury Brothers Limited, Bournville, and distributed by Sir Isaac Pitman & Sons Ltd., 39-41, Parker Street, Kingsway, W.C.2. 10 in. \times 7 $\frac{1}{2}$ in. 84 pp. Price 8s. 6d. net.—Many of the vital problems confronting industrialists to-day in planning their post-war policy are discussed in this record of the business experience of Cadbury Bros. Ltd. during the years between the two great wars. An important aspect covered is that of the relationship and co-operation between management and employees. The development of the firm's railhead-depot system of delivery is of special interest. The task of distributing factory output to thousands of wholesale and retail customers is obviously of considerable magnitude. To deal with this problem the firm has built up a country-wide system of railhead depots. Loads are sent from the factory to the depots by rail in bulk-containers, with subsequent distribution by motor vans. It is stated that the depot system has resulted in a reduction of transport costs, per ton, of nearly 50 per cent.

The Function of State Railways in Indian National Economy. By T. V. Ramanujam. Madras: The Madras Law Journal Press. 7 $\frac{1}{2}$ in. \times 5 in. 183 pp. Price Rs. 4 net.—Though one cannot agree with all the author's arguments and statements, we have no hesitation in saying that his is a remarkable treatise which will interest all connected either directly or indirectly with Indian railways. Its scope is not, however, limited to the Indian sphere, and is, in fact, a work full of quotations regarding, and references to, railway policies in many countries. It begins as an historical study of the origin and evolution of Indian railways and railway policies, and compares them at every stage with those of Britain, America, France and Germany. Particular attention is paid by the author to what he considers the benefits and drawbacks resulting from these policies from time to time. Comparisons between State and company ownership and administration come much into the picture, and the guarantees and detailed conditions under which the companies' agreements functioned are fully discussed. One of the most notable features of this work is its wealth of world-wide authoritative quotations, and references to them are made in footnotes, appearing on almost every page, and in the bibliography, which is extremely comprehensive.

The last chapter is devoted to the revolution in transport problems caused by the internal-combustion engine and the need for State intervention, with particular reference to British road-rail problems and the Government's attempts to solve them. The foreword is by Sir C. P. Ramaswami Aiyar, K.C.S.I., K.C.I.E., LL.D., and provides a good summary of the treatise. This foreword concludes by saying that the main topics in India are (a) the speedy nationalisation of the railways, (b) definite and co-ordinated control over the transport system of the country as a whole, and (c) the evolution of a policy to prevent cut-throat competition and an adjustment of rates to facilitate the paramount interests of internal and external trade and the encouragement of Indian industry and manufactures. None of these points has been missed in this volume.

New Montreal Central Station, Canadian National Railways. London: *The Railway Gazette*, 33, Tothill Street, Westminster, S.W.1. 11 $\frac{1}{2}$ in. \times 8 $\frac{1}{2}$ in. Paper covers. Price 5s.—The widespread interest which normally attaches to any important new railway station is intensified at present in view of the post-war need for rebuilding, partly because of air raid damage, and partly by reason of a period of years during which little or none of such work has been effected. The only example of an important new station being brought into use during the war is provided by the Central Station in Montreal of the Canadian National Railways. Those who are interested in station architecture, layout, and management, are provided by this booklet with sufficient plans, illustrations, and details, to appreciate the effective use of a hillside site which has been made in order to provide a three-level station to accommodate heavy passenger traffics, with possibilities of extensive commercial development above. The text is reprinted from a series of articles in *The Railway Gazette*, but the illustrations have been amplified by four pages of photographic reproductions from specially-taken views.

La Maquinista Terrestre y Marítima, 1856-1944. Commemorative volume published by the Spanish engineering undertaking of this name at Barcelona. 125 pages, 8 $\frac{1}{2}$ in. \times 10 $\frac{1}{2}$ in. Profusely illustrated.—This handsomely produced volume is designed to place on record the principal facts concerning the history and development of the well-known firm of Barcelona, La Maquinista Terrestre y Marítima, and to present a comprehensive picture of its

present activities and products; and in this it succeeds admirably. The undertaking was founded in 1856 by Nicolás Tous Mirapeix, of whom and of Messrs. José M. Cornet y Mas and F. Junoy Vernet, leading figures in the business since, the book contains finely-coloured portraits. It occupied itself progressively with almost every branch of engineering, as opportunity arose, but although the first railway in Spain was opened in October, 1848, between Barcelona and Mataró, many years passed before the building of locomotives was undertaken in the country. In 1884, however, the M.T.M., as the firm is habitually designated, constructed two small steam tram engines for the metre-gauge line connecting Barcelona and St. Andres de Palomar, and in the next few years some other small locomotives were turned out. It was not until 1895 that the firm received an order for express locomotives to run on the then Tarragona Barcelona & France Railway. These proved very successful and orders were then obtained from the well-known M.Z.A. Railways for engines which are still running. The custom of importing locomotives still largely obtained, but up to the 1914-18 war the M.T.M. had a certain amount of business in supplying the light and narrow-gauge lines in Spain. The economic situation brought about by the war gave a considerable impetus to home production, with the result that the M.T.M. has built up an excellent locomotive department and the present volume contains numerous illustrations of types of engine supplied to the various companies and later to the national system of lines.

The bridge department, one of the most important in the firm, has been responsible for some of the largest railway bridges in the country, many of which are illustrated and all-over roofs at large stations, cranes of various kinds, sheds and other structures have been delivered to the railways. The workshops and foundries have been much enlarged of recent years. The civil war effected a temporary set-back in the fortunes of the M.T.M., but it appears now to have returned to its full activity.

Tangyes Axle Production Lathes. We have received from Tangyes Limited, Birmingham, catalogue No. 620 illustrating its latest carriage and wagon axle lathes. The catalogue is well produced and shows typical tool layouts for the three lathes described and illustrated. They are (1) axle journal re-turning and burnishing lathe, (2) 16-in. heavy-duty rough-turning lathe, and (3) axle-ending and centring lathe. The axle journal re-turning lathe can be built to suit any gauge from 3 ft. 3 $\frac{3}{4}$ in. to 5 ft. 6 in.

The Scrap Heap

MR. BEVIN IS BLUNT

I have not abandoned nationalisation. I had great misgivings about letting the railways into civil aviation.

I would never have allowed railways to be dock owners.—*Mr. Ernest Bevin at the Mansion House Association on Transport.*

TRIBUTE TO THE BAILEY BRIDGE

The best and most popular reverse lend-lease item of them all—that's the way U.S. Engineers in Germany feel about British Bailey bridging equipment.

"It's a honey," said weatherbeaten Lt. J. L. Ryan, of 121, East Park, Butte, Montana. "So easy to construct, so quick and capable of carrying the heaviest of loads. You can have a triple, triple Bailey if you like," he said, "and the load hasn't been invented which is too heavy for that."

MACHINE TOOLS BEFORE TINNED PEACHES

After the war above all we shall need a veritable Elizabethan spirit of initiative and high adventure. We must counteract the idiotic idea that it is immoral for a man to want to get on in the world or to make legitimate profits out of his enterprise. I cannot imagine how any sane person can believe that we can get this initiative under nationalisation. I think the State is a rotten employer. I have no belief in the efficiency of Government trading. To meet American competition, savings must be expended on machine tools, and on the re-equipment of British railways, coal-mines and other undertakings before we can import silk stockings or tinned peaches from California.—*Captain L. D. Gammans, M.P.*

BACK-SCRATCHERS FOR BUFFALOES

A curious contest between the Union Pacific Railroad, in its early days, and the buffalo, is graphically described in the American book "Steel Trails—The Epic of the Railroad," by Martin D. Stevers. "The trouble lay in the fact," he writes, "that the telegraph poles, the only solid upright objects on the prairies, were hailed by the buffalo as Heaven-sent back-scratchers; and a few hundred scratchings were all that any pole could deliver without being toppled

over. Creighton's (Superintendent of Telegraphs) happy idea for ending this was studding each pole with shoemaker's awls; and he swept the Middle West clean of these viciously pointed little instruments for the purpose. But he had reckoned without the tangled mat of hair in the buffalo coat. Whereas the pole had been a fair scratcher before, it was perfect now, and received ten visits where before it had attracted one. So Creighton sadly resigned himself to accepting acts of buffalo as amounting to acts of God, and organised his programme to set up the poles as often as needed."

A length of 2,200 miles of the Russian Pacific Railway is now open and Omsk is now reached by rail. The cost has been about \$44,000 per mile. The natural conditions were on the whole unfavourable. . . . On the sections between Ufr and the Sima River there was, between Urakowo and Bulaschawa, a bog of about 60 miles extent, which had been formed through the rain water accumulating in the course of thousands of years in this natural pit of granite.—*From the "Scientific American" of November, 1894.*

100 YEARS AGO

[From THE RAILWAY TIMES, April 5, 1845]

TENDERS FOR RAILWAY SLEEPERS.—

CHESTER AND HOLYHEAD RAILWAY.—Wanted by this Company, about 250,000 Railway Sleepers, not less than nine feet long, triangular in section, of good sound Memel or Dantzig timber, in logs perfectly straight, and 9½ or 13½ inches square, sawn diagonally, the former into two, the latter into four sleepers; the cut to be made perfectly true, and sawn or otherwise brought to a parallel breadth on the face of 12 inches, with the edges at right angles thereto. The remaining angle to be chamfered off to a width of one inch, parallel with the face, or upper surface. Any sleepers not in accordance with this description, or that are otherwise defective, will be rejected.

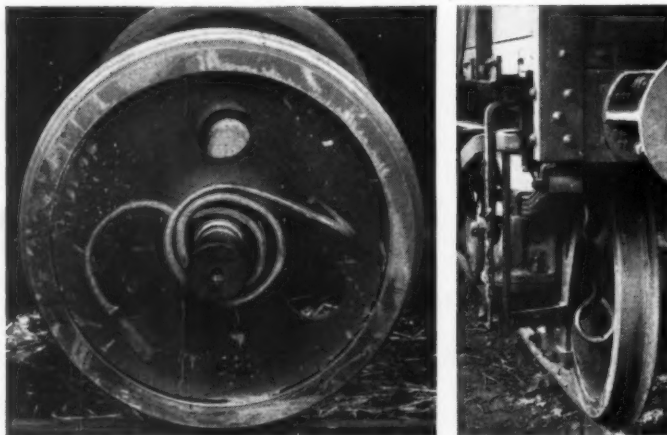
Tenders will be received for any quantity of the foregoing, not less than 10,000. The price to include delivery on wharf at Holyhead, Bangor, Conway, Mostyn Quay, Chester, or either of them, in such proportions as may from time to time be directed. Delivery to commence on the 1st June next, and to be completed in twenty months for the entire quantity, and in such time for the several portions as may be directed. Security will be given for the due fulfilment of the contract. Payment for each month's delivery, approved by the Engineer, will be made at the end of the following month, in cash. The Directors will meet to consider Tenders for the foregoing on Wednesday, the 9th April, at 2 o'clock.

The Tenders to be delivered to the Secretary not later than 11 o'clock in the morning of that day. The Directors do not bind themselves to accept the lowest Tender.

By order, **GEORGE KING, Secretary.**

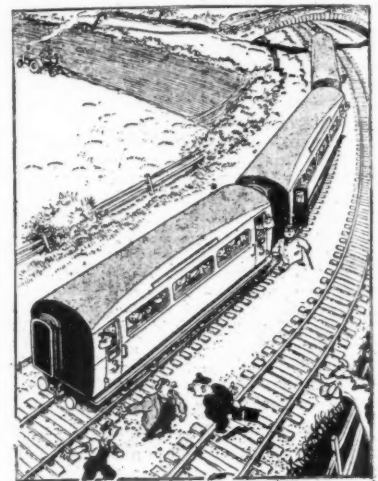
62, Moorgate-street, London,
14th March, 1845.

Fire Iron Round Wagon Axle



Two views of an engine coal pricker which became twisted three times round the wheel hub of a Southern Railway wagon axle at Nine Elms

SMILING THROUGH (No. 3,253) By LEE



"The pilfering on this line is scandalous. We stop to find your guard's van and someone pinches my bloomin' engine!"

[From "The Evening News"]

L.M.S.R. DETECTIVE-SERGEANT GIVES EVIDENCE IN HOSPITAL

The magistrate (Mr. J. L. Pratt) transferred Clerkenwell Magistrate's Court to the lecture room of the Royal Free Hospital recently, and Detective-Sergeant Frank Worth, of the L.M.S.R. Police, having been wheeled into the room on a trolley-bed, described how he had jumped on to the running-board of a motor van, and how it had overturned on top of him. At the end of the proceedings two men were committed for trial at the Central Criminal Court on charges of stealing 15 bales of cloth from St. Pancras Station and causing grievous bodily harm to Detective-Sergeant Worth. They pleaded "not guilty" and reserved their defence.

RICHEST RAILWAY

Appealing for funds for the Paddington Welcome Home & Re-Establishment Fund for Ex-Servicemen, Mr. Brendan Bracken said that as M.P. for North Paddington, he realised what a unique borough it is. "For one thing, it has the terminus of a great railway; and since it is one of the richest, Lord Portal, as Chairman, will have a rare opportunity to contribute lavishly."

Lord Portal suggested that the M.O.I. was not too badly off, either.—*From "The Evening Standard"*

TAILPIECE

The railways make it very plain
That this year's holiday will be
The grimmest struggle once again
To catch a train to sand and sea.
As through the news we take a glance
We read the warning everywhere,
That locos have been sent to France,
And trains for holidays are rare.
So therefore we must stay at home,
Or start to plan a sturdy hike
If over hill and dale we'd roam,
Unless we have a humble bike.
Then with what bliss we will survey
A perfect garden free from weeds,
And feel our sacrifice that day
Has helped to meet our Allies' needs.
A. E. C.

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Record Weekly Earnings

The gross earnings of railways, harbours and airways during the week December 16 to December 23, 1944, amounted to £1,086,456, a new record. The war surcharge of 10 per cent. accounted for £97,000 of this total. Hence the earnings, with the war surcharge excluded, fell short of the £1,000,000-a-week mark only by some £10,000, and broke the previous earnings record by about £25,000.

Suburban Passenger Traffic

Nearly 80,000,000 train journeys a year are being made by suburban travellers on the Witwatersrand and in Pretoria. The number of suburban passenger journeys on the Witwatersrand for the six months ended September 30 last was 37,113,680, which was some 5,000,000 more than the number for the corresponding period of the previous year. Third class passenger traffic has shown the greatest advance; for the six months ended September 30 it accounted for 21,386,929 journeys, compared with 11,117,155 for the six-month period to March 31, 1939.

For the first time suburban traffic on the Witwatersrand has exceeded that of the Cape Peninsula area. The figures illustrate the extent to which suburban coaching stock is being used, and the impracticability of using suburban coaches for relieving the pressure on main-line stock.

UNITED STATES

Chicago-Pacific Coast Competition

New competition for the traffic between Chicago and the north-west cities of Seattle, Portland, and Tacoma is foreshadowed by orders for lightweight alloy-steel passenger stock which have been placed by the Northern Pacific and Great Northern Railways with the Pullman-Standard Car Manufacturing Company. The Great Northern requires five baggage-mail vans, 20 coaches, five dining cars, five dormitory coffee-shop cars, 15 sleeping cars, and five bedroom-lounge-observation cars. The Northern Pacific order is for 36 *de luxe* coaches, each to seat 64 passengers.

The principal trains of the two companies on this service are the "Empire Builder" (Great Northern) and the "North Coast Limited" (Northern Pacific). It is expected that diesel haulage will be used, and times established similar to those of the Chicago & North Western "City" streamliners between Chicago and Los Angeles, San Francisco, and Portland. Between Chicago and Minneapolis the "Empire Builder" and the "North Coast Limited" are operated by the Chicago, Burlington & Quincy Railroad.

Collision in A.T.C.-Controlled Territory

A report has been issued by the Interstate Commerce Commission on a collision which occurred on September 28 last at Missouri Valley, on the double-track main line of the Chicago & North Western Railway between Chicago and Council Bluffs (Omaha). Operation on this line is by timetable, train order, and continuous inductive signalling, but there are no lineside signals. A northbound passenger train, the "North American," en route from Minneapolis to Omaha, and joining the main line at Missouri Valley, was brought to a stand, in accordance with normal practice, clear of the junction,

which has no interlocking plant. The front brakeman reported the arrival of the train by telephone to the train dispatcher, and then set the hand-operated switches so that his train could proceed to the eastbound main track, and by crossover road to the westbound track.

Meantime, however, an eastbound fast freight, the "Calumet," was approaching at 50 m.p.h., and actually was only 1,200 ft. away when the engine of the passenger train entered the crossover. The freight train was authorised to travel at up to 60 m.p.h., but was required to reduce to 35 m.p.h. for a curve at Missouri Valley. The cab signals indicated "clear" until a point 2,800 ft. west of the switch giving access from the branch to the eastbound main, though, had the switch been moved earlier, the driver of the freight train would have had his first red-over-yellow caution indication 5,400 ft. earlier still. He immediately reduced speed, to forestall the automatic application of his brakes, and made an emergency application on sighting the passenger train, but it was too late. Nine passengers were killed, and 95 injured.

The I.C.C. report holds that, had the switch from the branch been controlled by electric locking, it would not have been possible to move it with the freight train so closely approaching, and so the accident would have been averted.

COLOMBIA

Proposed New Railways

New railway lines totalling approximately 1,180 miles are planned in Colombia, according to a study presented by the Chief of Co-ordination & Transportation of the Colombian National Railways. The projects consist of the Ibaguë-Armenia link line; the extension of the Ferrocarril del Norte, Section 11, to reach Santa Marta or Magdalena; the extension of the Ferrocarril del Pacifico to Cartagena in the north and to Pasto and Diviso in the south; and the extension of the Ferrocarril de Girardot to Garzon.

The total length of Colombian railways according to this report, is 2,057 miles, of which 1,363 miles are the property of the National Government, 449 of the Departmental Governments, and 245 miles of private companies.

BRAZIL

Central Railway Improvement Scheme

One of the major projects of the Central of Brazil Railway in its effort to expedite transport is that of grade reduction and improvement of alignment on the line between Barra do Pirahy and San Paulo, which is called the San Paulo branch. It is 234 miles long, and runs 209 miles in a westerly direction up the valley of the Rio Paraiba, before crossing into the Tiete Valley, through which it runs 34 miles to San Paulo. In the remodelling of this branch, 201 miles is being re-located to give a maximum gradient of 0.5 per cent. (1 in 200) and a minimum radius of curvature of 689.5 metres. The improvements now being effected will enable train loads to be increased from 600 tons to 1,700 tons, will reduce the running time by one half, and should effect a saving in operating expenses of some \$11,500,000 (U.S. currency).

This is the second of three important improvements being undertaken by the Central of Brazil Railway. The first is a

similar project on the Barra do Pirahy to Belo Horizonte line, comprising 66 miles of line of re-location estimated to cost some \$4,000,000, with an operational saving comparable to that expected for the San Paulo branch. The third job will be that of completing the electrification of the Rio de Janeiro to Barra do Pirahy section of 68 miles for both goods and passenger traffic.

CEYLON

Centralised Traffic Control

The train service on the Maho-Trincomalee section of the Ceylon Government Railway has been brought under centralised traffic control. The establishment of this system is expected to obviate the train delays which are apt to occur on this line. Centralised traffic control already operates over a considerable portion of the railway system, including the Colombo-Talaimannar line.

Train Thieves

A new procedure adopted by train thieves in Ceylon has recently come to light. It has been ascertained that when a train is temporarily held up before entering a station, thieves open a wagon, remove such goods as they can, and dump them on the line. Then, when the train proceeds, the goods are removed. It appears that gangs of thieves are now active, taking up positions near station signal posts at night on the offchance of breaking open a railway wagon and removing some or all of the contents.

SWITZERLAND

Civil Airport Scheme

A scheme approved recently by the Swiss Federal Council, and which is to be submitted to the Federal Assembly, provides for four main urban airports, at Basle, Geneva, Zurich and Berne. The Zurich airport, to be constructed near Kloten, is to rank as Switzerland's intercontinental airport. Kloten is 6.8 miles to the north of Zurich, on the relief railway line branching off at Oerlikon from the Zurich-Winterthur main line and joining it again to the west of Effretikon, 5.6 miles to the south of Winterthur. Kloten would replace the present civil airport of Zurich, at Dubendorf. There are to be five minor or regional airports at Lausanne-Ecublens, La Chaux-de-Fonds-Les Eplatures, Locarno-Magadino, St. Gallen-Altenrhein and Samedan (previously known as Samaden). All these existed also before the present war.

Under the scheme, the Federal Government would subsidise, to the extent of 30 per cent. of the cost, the construction or improvement of the main airports and the development of the intercontinental airport of Zurich. The subsidies for the regional airports would be at 25 per cent. of the cost. The subsidy in connection with the Geneva airport should be paid in 1945. According to the Swiss press, the Government of the Canton of Geneva is concerned lest the Geneva airport at Cointrin, the development of which has been undertaken at great cost in recent years, be deprived of due importance in the post-war air services. The extension of the original airport and the new facilities at Cointrin are nearing completion. Cointrin, it is officially stated, is at least five years ahead relative to the future Kloten airport. The Lausanne municipality expressed its dissatisfaction with the new status of regional airport suggested for its Ecyblens aerodrome. It is officially stated that in 1937 the Lausanne municipality obtained an assurance that its then new airport would be classified as suitable for handling intercontinental air services.

Why Locomotive Boilers Foam*

Experimental investigation of the problem in America shows causes of variation in foam height

THE amount of foam on the surface of a boiling liquid depends on the rate of evaporation and the chemical composition of the fluid. In a locomotive boiler it should be remembered that, as foam builds up, it is occupying a smaller and smaller space. Evaporation towards the rear of the tubes and superheater flues is rather greater than over the forward portions; consequently the position of the steam dome has an important influence on the amount of carry-over. The horizontal rate of travel of foam depends on the rate of evaporation, the steam space and the life expectancy of the liquid film; a typical figure is 3.5 ft. per sec. near the steam dome.

At 285 lb. per sq. in., saturated steam has a specific volume of about 1.61 cu. ft. per lb.; the density is therefore nearly ten times that of air, and its power of entraining droplets also is much greater. Moreover, at that pressure, the density of water is only 0.85, which also increases the tendency of steam to entrain small drops.

As boiler performance is thus influenced by foam height, it was considered by the American Railway Engineering Association to be a matter of sufficient importance to appoint a special subcommittee to examine foam height in a standard apparatus at a standard operating rate, instead of following previous investigators and focusing attention merely on the concentration of dissolved and suspended impurities whenever carry-over occurs.

The evaporation rate in a locomotive may be taken as nearly 1 gal. of water per sq. ft. of water-line area per min., representing, at 285 lb. per sq. in., an upward gas flow of 13.4 ft. per min. This volume rate can be reached at atmospheric pressure by the use of a 500-watt heater in a tube of 2½ in. inside dia. Five such tubes were assembled as one piece of apparatus. Inverted bottle feeders, discharging through rubber tubes, kept the boiler water level constant. Temperature or pressure variations alone had little effect on foaming. To allow for the lower rate of conversion of bicarbonates to carbonates at atmospheric pressure, the composition was controlled by adding the correct amounts of pure chemicals.

The main research was directed towards the determination of the foam height with the arbitrary concentration of 150 gr. per gal. of various proportions of the three-component system: sodium sulphate, sodium carbonate, sodium hydroxide, at a fixed evaporation rate.

It was found that 150 gr. per gal. of sodium sulphate will give 1 in. of foam; the same amounts of sodium carbonate and sodium hydroxide give respectively 4 in. and 3 in. And 30 per cent. of sodium sulphate, with 35 per cent. each of sodium carbonate and hydroxide, gives 17 in. of foam with a concentration of 150 gr. per gal. The foam height for mixtures of sodium chloride and sodium sulphate was also determined. Sodium chloride gives no foam, but a "50-50" mixture of chloride and sulphate gives 3 in.

The accompanying graph shows some of the results of the investigations. The composition at any point on the graph,

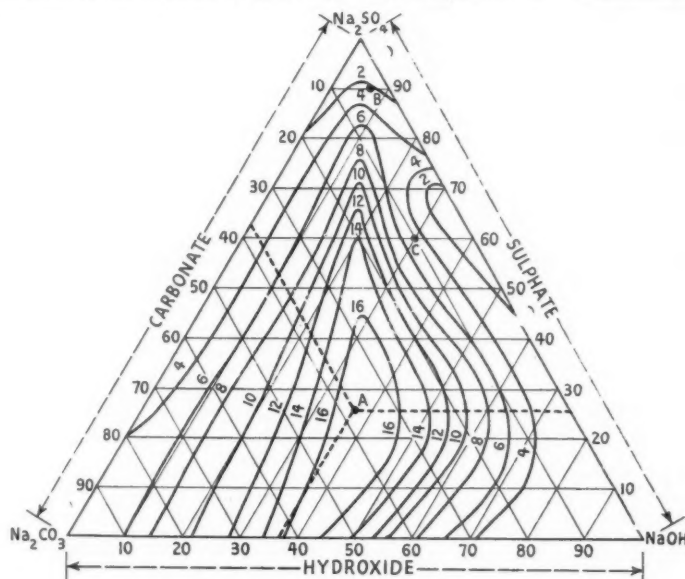
* Report presented at a recent meeting of the American Railway Engineering Association; abridged. The investigation was made by a sub-committee of the Committee on Water Service, Fire Protection & Sanitation

such as *A*, is determined thus: for sodium hydroxide, follow the dotted line downward to the left, and read 37 per cent. For sodium carbonate, follow the line upward to the left and read 37.5 per cent. For sodium sulphate, follow the line to the right and read 25.5 per cent. Similarly, point *B* represents percentages of 90, 6.5, and 3.5, for sulphate, hydroxide, and carbonate respectively, and for *C* the corresponding percentages are 60, 30, and 10. All substances are reported as such, and

plains the statement: "waters won't mix."

As to the effect of suspended matter on foam height, it was found that when calcium carbonate is precipitated inside a boiler with high dissolved solids, the foam is very dirty. Yet after a small dose of some form of tannin, the particles are wetted by the liquid and quickly sink out of circulation, with no change in foam height.

When foaming occurs, steam bubbles are small from the instant they leave the heating surface; when no foam is formed the bubbles are large. This has been noted at pressures up to 300 lb. per sq. in., irrespective of concentration, and



Foam height with 150 grains per gal.

not in terms of calcium carbonate. Contour lines indicate the thickness (in inches) of foam produced by the various compositions at a constant boiling rate. Pure chemicals and distilled make-up water were used to obtain these data.

Lime-soda treated water for locomotives usually shows from 10 to 40 per cent. alkalinity, with sodium hydroxide forming three-quarters of the alkaline material; this is represented by the region between *B* and *C* on the graph, which shows the foam height to be 3.5 in. for a concentration of 150 gr. per gal. If any other water supply containing bicarbonate is taken, the reaction between hydroxide and bicarbonate produces carbonate, and the boiler water composition moves to the left on the graph, towards an indicated foam height of 5-12 in. Foaming is thus to be expected under these conditions, as about 1 in. increase in foam height may cause carry-over.

Water containing much magnesium in solution causes a similar "shift," as it uses up hydrogen with the precipitation of magnesium hydroxide. Also, if wayside-treated water is used over a district, the operating composition may be on the left side of the "ridge" on the graph. Then, if completely treated water is taken, the composition may move to the right into a greater foam-producing area, and carry-over will ensue with no appreciable increase in dissolved solids. This change can be more rapid and complete than the change to the left. The graph thus ex-

plains the statement: "waters won't mix."

with a great variety of anti-foam compounds. All vegetable oils, for example butter, coconut oil, castor oil, etc., are more or less efficient foam inhibitors; and cholesterol is extremely efficient at atmospheric boiling temperature.

Foam height is increased by placing a fine screen in the path of rising steam bubbles, to break them up into smaller ones, and is reduced by allowing small bubbles to pass through a suitable open-ended cone, which forces them together to form large bubbles. A device embodying the latter idea has been tried, with good results, on a locomotive.

The roughness of the heating surface also influences foam height; with a rough surface, or a surface covered with small points, the steam bubbles are smaller, and foam height is correspondingly greater. Bubble formation was studied by the Edgerton stroboscopic process, at Massachusetts Institute of Technology.

Finally, the committee consider that locomotive boilers generally have too small a steam space, in view of the greater tendency to foaming which has accompanied the introduction of alkaline sodium compounds into feed water. The locations of steam domes and blow-off cocks is also important. Tapered boilers and boilers with the dome on a small-diameter ring are to be condemned. Lastly, the suggestion is made that the graph be used in actual investigations of foaming, to see how nearly laboratory research fits working conditions.

Standard Military Railway Bridges—2

Describing the standard through-truss type, for 90-150-ft. spans, the method of launching, and the heavy type trestling used with it

PART 1 of this article, published in our issue of March 2, dealt with the unit construction type of railway bridge spans up to 85 ft. in length and the lighter type of steel trestle used with them as piers. Part 2 carries on the series by dealing with the standard through-truss type, for spans of from 90 ft. (clear) to 150 ft., and the heavy type for standard military steel trestling, on which they are supported when, for instance, abutments or piers have been demolished. Like the Unit Construction bridge, it is a product of the War Office, and has been adopted as standard by the American Army and the Railway Executive Committee. It is designed only as a through-span, or more strictly speaking, as a half-through-span structure.

The equipment follows bridge construction methods fairly closely, using shop riveting, but allows of length adjustment in 10-ft. 3-in.—the panel length—increments, as explained below, with a range from 92 ft. 3 in. to 153 ft. 9 in. between centres of bearings. The various lengths of span will carry 18/20 B.S. unit loading without speed restriction, except in the case of the 153-ft. 9-in. span. The trusses are spaced at 18 ft. 2½ in. between centres to conform to the Berne structure gauge for single lines, and measure 13 ft. 8 in. in depth. All bridges of this type are seated on bearings of simple rocker and two-roller expansion types.

The dimensions of the component parts of each truss are arranged so as to give a camber of ¾ in. at or throughout the centre of each span, irrespective of its length. The end camber details, which are constant for all spans, are as shown below:

Distance from bearing at each end	Camber in.
10 ft. 3 in.	8
20 ft. 6 in.	16
30 ft. 9 in.	24
41 ft. and onwards	uniform

Field connections have been reduced to a minimum by making the assembly units as large as can be handled conveniently. The heaviest shop-riveted section weighs about 3 tons 16 cwt.; it is 30 ft. 9 in. long, though there is another standard section nearly 38 ft. in length weighing 3 tons 11 cwt. All sections, therefore, can be transported either by rail or road. The field connections are made by using bolts or drift-pins similar to those described as standard practice with U.C.R.B. spans. If, however, a bridge is to remain as a permanent structure, rivets may be used.

Methods of Assembly

This type of bridge weighs less than 1 ton per foot run, and compares favourably with normal bridge construction practice. The main girders are built up of sections of standard lattice construction, which can be made up either on the site, or, if this is inconvenient because of lack of space or other considerations, they can be assembled at any convenient spot some distance away on standard bridging trolleys to form separate complete assembly units; these units are then wheeled to site and there coupled up. To demonstrate how handy these units are, one of our illustrations shows one on its trolleys on a sharply-curved spur siding.

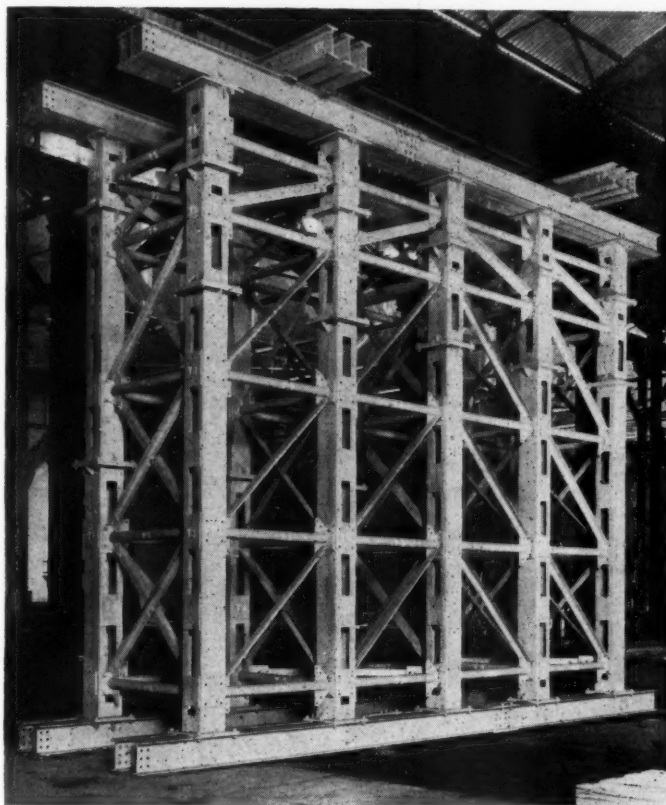
These assembly units are of three types:—

- (a) An end panel consisting of a raking end post and a 10 ft. 3 in. length of the bottom boom;
- (b) A 3½-panel length of truss, suitable either for attachment to (a) or as an end section of the girder having a vertical end post; and
- (c) A three-panel length of truss, made up of two complete and two half-panels, suitable to form a central section of the girder for spans over 92 ft. 3 in. long.

A 92-ft. 3-in. span is composed only of two (a) and two (b) units. To assemble

Actually, only the main girders are launched and they are braced at close (5-ft. 2-in.) centres, so that launching one span through another presents no difficulties. The launching nose for spans up to 120 ft. is 62 ft. long; and that for larger spans is 73 ft. 3 in. The erection counterweight tail-frame is usually mounted on a bogie flat truck with the springs replaced by hard-wood packings.

Both nose and tail-frame are connected with the main girders by connecting links secured by large pins, so that their removal takes the minimum of time. The heavy-duty compensating trolley, illustrated, carries a very concentrated load during launching, and it is, therefore, most important that the approach track shall be as nearly rigid as possible. It may



Standard-unit heavy-type steel trestle general assembly

a 102-ft. 6-in. span girder, two (b) and one (c) units are used. One (a) unit is added to the 102 ft. 6 in. assembly to form a 112-ft. 9-in. girder, a rather odd-looking structure with a raking end-post at one end and a vertical one at the other.

The 123-ft. span is symmetrical; two (a), two (b), and one (c) units. The vertical-ended 133-ft. 3-in. girder has two (b) and two (c) units; to form a 143-ft. 6-in. and a 153-ft. 9-in. span, an (a) unit is added at one end and at each end respectively.

Provision is made for seating these spans on skew piers or abutments by advancing one girder one panel-length, 10 ft. 3 in.; this gives a right- or left-hand skew angle of 29 deg.

The standard method of erection is by launching each span clear over the gap to be bridged from the approach track.

be necessary to insert intermediate sleepers in the track or to carry it on small deck spans; it must also be absolutely straight and level. To allow for the sag in the cantilever girder and launching nose, the receiving rollers beyond the gap must be from 1 in. to 3 in. lower than the line of the bottom of the girders produced, according to the length of span.

The launching procedure is briefly as follows. The girders are carried up to the gap on three trolleys, (1) a pilot trolley under the first or second panel point from the leading end of the girders; (2) the compensating trolley, supporting each girder under two panel points (as illustrated), in such a position that it will carry the cantilever until the nose reaches the far side of the gap; and (3) a tail trolley at the trailing end of the span. The tail-frame will require 25 tons of

kentledge—preferably of rails—for spans up to 120 ft., and 30 tons for longer spans. Haulage is by winch and tackle.

The leading trolley is released when it reaches the near side of the gap. As soon as the nose reaches the point of support beyond the gap, the span is jacked up and the compensating trolley moved back one bay. The span, after being lowered on to this trolley again, is hauled forward another panel length and the process repeated until the leading end of the main girders reaches the far side of the gap. The launching nose can be dismantled piecemeal as each successive part of it ceases to function in supporting the leading end of the span.

After launching, the girders are lowered on to rolled-steel joists with the aid of simple trestle gantries and a link system. The temporary cross bracing is now removed, and the main girders skidded outwards to their final centres. The flooring can then be introduced with the assistance of a light travelling lift operating on the top chords. It consists of cross girders 16 ft. 6 in. \times 2 ft. 6 in. and stringers, 20 in. \times 6½ in. \times 65-lb. rolled steel joists.

This type of bridge is suitable for all gauges from metre to 5 ft. 6 in.; for metre and 3-ft. 6-in. gauges, sleepers 7 in. thick must be used as, by reason of

the spacing of the stringers, they will be in-bending.

In general principle this heavy trestle equipment is similar to the light type described in Part 1 of this article. It consists of all-welded column units with cap and base to the same detail, and a system of light tube horizontal, and angle diagonal bracing. The columns are, however, of greater carrying power, namely, 50 tons a column, and they are spaced at 6-ft. instead of 5-ft. centres; they are therefore suitable for trestle piers to carry the standard through truss and heavier spans. To support these heavier loads the cill members are 12-in. \times 6-in. \times 54-lb. r.s.j., and are sent out ready drilled with joint covers, in 12-ft. and 18-ft. lengths; the same members are also used as base grillages.

The equipment can be used for the construction of piers of any width, length, or height up to about 250 ft.; heights can be varied by increments of 1 ft. 4 in. The width and length of the structure can be reduced from the base upwards by the introduction of column rakers, so that overturning forces due to wind and tractive effort are resolved within the structure.

As in the case of the light trestling, the bracing is very simple, consisting of a tubular horizontal unit carrying integral

the fastening to both column and diagonal bracing. The diagonal bracing members are plain drilled angles.

The column units consist of batted 12-in. \times 3½-in. rolled steel channels with robust cap and base to standard drilling, insuring easy coupling with external bolts or attachment of all beams. The column shaft width dimensions are maintained to fine limits of tolerance by varying the batten thickness to suit the rolling. Column length is fabricated exact to measurement by means of end machining. All similar units are made interchangeable by the use of jigs, so that assembly in the field is always straightforward and without snags. For all fastenings, ½-in. black bolts are used.

Erection of comparatively small piers is effected with the aid of a mast derrick, which serves alternatively as a swinging jib, as in the case of the light trestle. For high piers, a climbing derrick is provided, which obtains its power from a mobile air-compressor. This specially-designed derrick operates from a light vertical track bolted temporarily to the side of a column, and incorporates a swinging jib and operator's cradle. It can place one column member on top of another and then climb up under its own power, and can also place units on surrounding columns.

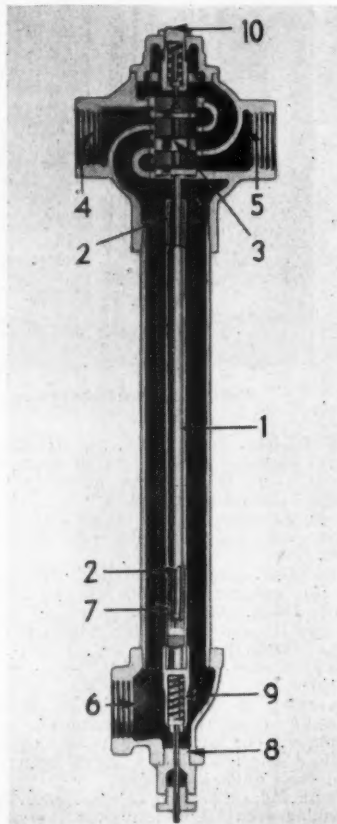
Automatic Temperature Control for Central-Heating Systems

THE Sarco Thermostatic Water Blender, or 3-way mixing valve, when fitted to a central-heating system, is designed automatically to control the radiator or heating-pipe temperature, and it is stated that by its use a fuel saving of 10 to 25 per cent. may be obtained.

In large buildings the frequent stopping and starting of the circulating pump disturbs the flow of the circulating water; this causes the temperature of the heating circuit to become uneven. The 3-way mixing valve is designed to keep this temperature as even as possible without recourse to the boiler.

The illustration shows a sectional view of the working parts of the Sarco Thermostatic Blender, which is supplied by Sarco Thermostats Limited, Alpha House, Cheltenham. The thermostat, 1, which contains temperature-sensitive mineral oil, acts on a piston connected to a rod, 2, which in turn controls the movement of the 3-way double-seated blender valve, 3. The action of the valve is automatic, and should the temperature of the return water through the inlet, 4, be too high, it is by-passed through the outlet, 6. If the water is at the correct temperature, the valve passes through the radiator and forces the pump to re-circulate the whole of the return water. If the return water is too cool, the valve opens and hot water passes from the boiler through 5 and finally through the radiators and back to the boiler for re-heating. The bellows tubing, 7, in the thermostat forms a gland for the piston. The setting screw is shown at 8 and the safety spring at 9.

The blender can be connected with a flexible capillary tube from the outside atmospheric thermostat by removing setting screw 8. When the thermostatic



blender is in circuit, the pipe from the pump is fitted with a T, one branch of which is connected to the bottom of the boiler, and the other to the blender intake, 4. The pipe line from the top of the boiler is connected direct to the blender through the other intake, 5. The water outlet pipe is coupled to the blender through the outlet 6; this pipe is connected to the radiators. The flow of the heating water is thus automatically kept at the correct temperature according to outside conditions.

DRUMM BATTERY CO. LTD. TO CLOSE DOWN.—The directors of the Drumm Battery Co. Ltd. have recommended to the Minister for Industry & Commerce, Eire, that the company should close down. The Minister has accepted this recommendation, and the company has arranged to go into voluntary liquidation. The activities of the company were suspended in August, 1940, because it was found impossible, because of the war situation, to make further progress towards the commercial exploitation of the patents or to secure supplies of materials. The company in a statement to the press says that before the suspension of activities in 1940, it had established the original claims made for the battery as a practical and economic means of railway traction for frequent stopping, short-distance, suburban traffic. With the co-operation of Great Southern Railways Company, a suburban passenger train service worked by four 2-coach Drumm battery train units had been put into operation on the railway line between Harcourt Street and Bray; and this service continues to operate satisfactorily. The batteries were guaranteed to have a working life of ten years; it is stated that they have stood up to this guarantee and that some of them have exceeded it.

Standard Military Lattice Through-Truss Span Railway Bridge



Standard lattice through-truss span girder system with launching nose (left) and tail-truck counterbalance (right) attached, mounted on compensating trolleys ready for launching



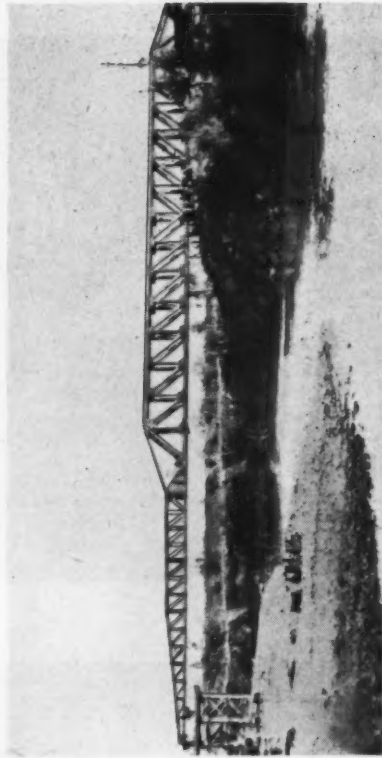
Left: Sections (a) and (b) forming assembly unit erected on trolleys ready to be wheeled to site for final assembly; note flexibility on sharp curve. Right: Special heavy-duty compensating trolley under girders at close centres prior to launching



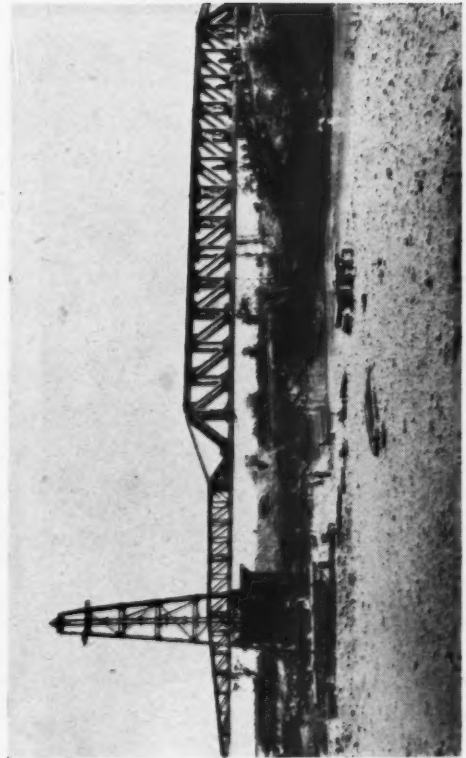
A Through-Truss Span Being Launched on the Italian Front



Stage 1: 153-ft. 9-in. span girders at close centres with launching-nose and tail-frame on trolleys moving up to gap to be bridged



Stage 2: Launching-nose has just reached trestle pier and heavy-duty compensating trolley is being moved back from ninth to tenth panel



Stage 3 (Left): Launching-nose half over pier; compensating trolley under twelfth panel. Stage 4 (Right): Span nearing pier. Launching-nose being prepared for dismantling



RAILWAY NEWS SECTION

PERSONAL

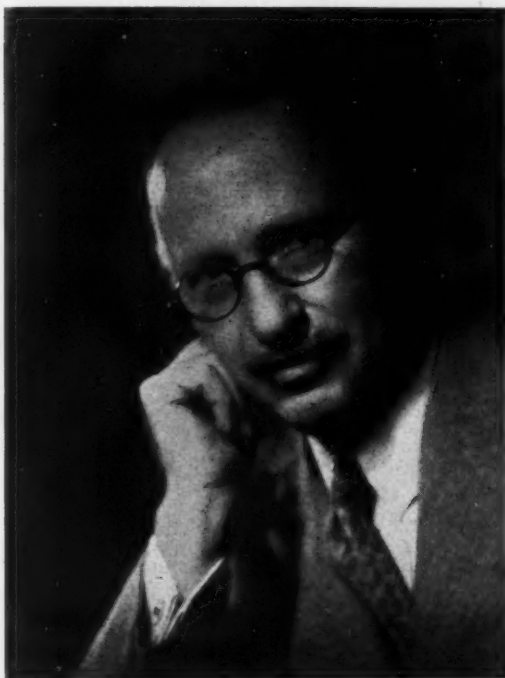
RAILWAY EXECUTIVE COMMITTEE

At the request of the railway Chairmen, the Minister of War Transport has agreed to the release of Mr. G. Cole Deacon from the Secretaryship of the R.E.C., which he has held since the formation of the committee in 1938. He has resumed his duties with the Railway Companies' Association. The Minister has appointed Mr. Edward Marsden, M.B.E., who was Mr. Cole Deacon's Principal Assistant, to be Secretary to the R.E.C. from April 1.

solicitor in 1904, he became a member of the Solicitor's staff, and served subsequently under Mr. C. de J. Andrewes, Mr. M. C. Tait, and Mr. H. L. Thornhill. During the last war Mr. Eddy served in the R.N.V.R., and while on active service was appointed head of the Parliamentary Department of the L.N.W.R. In 1921 he became Assistant Solicitor to that company, and in 1923 to the L.M.S.R. He was appointed Solicitor to the L.M.S.R. in 1927, on Mr. Thornhill's promotion to the position of Chief Legal Adviser. When Mr. Thornhill retired from that position in 1939, Mr. Eddy was appointed to succeed him, and

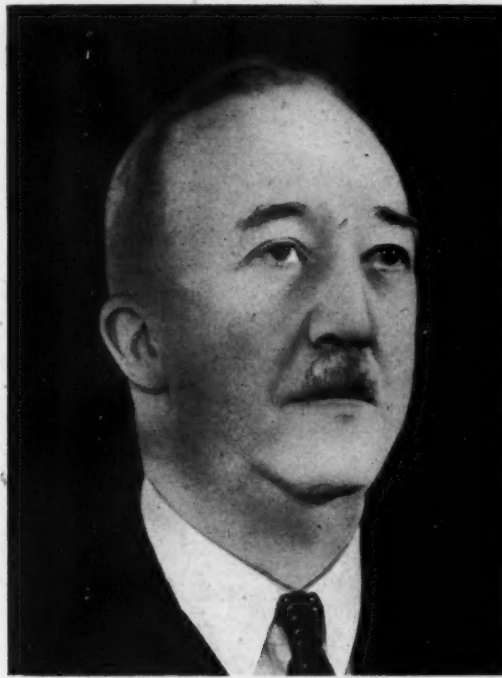
Mr. J. E. Bagguley has been appointed Chief Engineer, North British Locomotive Co. Ltd.

Mr. R. P. Humphrys, Assistant Solicitor London Midland & Scottish Railway Company, who has been appointed Chief Solicitor, was born on May 3, 1890, at Horsmonden, Kent, and was educated at University School, Hastings, and at Clare College, Cambridge, where he graduated in 1912. He then was articled to Mr. J. W. Alsop, of Alsop, Stevens, Crooks & Company, Solicitors, of Liverpool. In September, 1914, he



Mr. Alexander Eddy

Chief Legal Adviser & Solicitor to the London Midland & Scottish Railway Company, 1939-45



Mr. R. P. Humphrys

Appointed Chief Solicitor to the London Midland & Scottish Railway Company

Mr. Alexander Eddy, Chief Legal Adviser & Solicitor to the London Midland & Scottish Railway Company, who retired on March 31, comes of a family (to which further reference is made in an editorial note in this issue) for many years connected with the former L.N.W.R. His father, the late Mr. E. M. G. Eddy, was at one time District Passenger Superintendent, Euston, L.N.W.R., and later Assistant General Manager of the Caledonian Railway, before becoming Chief Commissioner of the New South Wales Government Railways. His brother, Sir Montague Eddy, who was for a time Mineral Manager, Euston, L.N.W.R., is now Chairman of the Buenos Ayres Great Southern Railway Co. Ltd. and Buenos Ayres Western Railway Limited. His step-brother, the late Mr. Cumberland Lowndes, was for many years an officer of the L.N.W.R. before being appointed General Manager of the Port of London Authority. Mr. Alexander Eddy was born in 1882 and was educated at Bannister Court School, Southampton. In 1898 he was articled to Mr. C. H. Mason, Solicitor to the L.N.W.R. On qualifying as a

since has combined the duties of Chief Legal Adviser, and Solicitor, to the company. Mr. Eddy took a prominent part in the important litigation under the Railways (Valuation for Rating) Act, 1930.

We regret to record the death on March 26, at the age of 82, of Earl Lloyd-George of Dwyfor, O.M., Prime Minister & First Lord of the Treasury from 1916 to 1922, who was President of the Board of Trade from 1905 to 1908. (See also editorial note).

GOVERNMENT APPOINTMENTS

Among junior ministerial appointments recently approved by the King are those of Mr. G. S. Summers, M.P., as Secretary, Department of Overseas Trade; and Flight-Lieutenant W. R. D. Perkins, M.P., as Parliamentary Secretary (designate), Ministry of Civil Aviation. The latter appointment will take effect when the necessary legislation setting up the Ministry of Civil Aviation has been passed.

was commissioned in the 2nd Line 7th Battalion of the Kings (Liverpool) Regiment. He served in France with the 1st Line 7th Battalion of the King's Regiment until invalided home in April, 1916, with trench fever. He rejoined the battalion in December, 1916, in the Ypres Salient; and commanded a company in the 3rd Battle of Ypres, July, 1917, and until wounded at Festubert in April, 1918. He was mentioned in dispatches. He was demobilised with the substantive rank of Captain in October, 1919. He was admitted a solicitor in July, 1920, and returned to Alsop, Stevens, Crooks & Company as Managing Clerk. In March, 1921, Mr. Humphrys joined the staff of the Solicitor to the L.N.W.R. as Junior Common Law Solicitor. In 1928 he became head of the department dealing with county court, workmen's compensation and police court matters; and in August, 1932, was appointed Divisional Solicitor, Manchester, L.M.S.R. On January 2, 1934, he returned, at his own request, to Euston, as Solicitor Assistant, Common Law; and in July, 1939, he was appointed Assistant Solicitor to the company.

The directors of the Great Western Railway Company announce the appointment of Mr. G. E. Orton as Chief Officer for Public Relations on the personal staff of the General Manager. Mr. Orton relinquishes his present appointments of Commercial Assistant to the Superintendent of the Line and Parliamentary Liaison Officer to the four main-line railways. In future he will give his whole time to public and Parliamentary matters associated with the railway in view of the important post-war developments contemplated by the G.W.R. Mr. Orton is well known in Parliamentary and Fleet Street circles.

Mr. J. H. Dunbar, M.C., who retired in 1942 from the position of Chief Mechanical Engineer, Sudan Railways, has been appointed Consulting Engineer to the Sudan Government, in succession to the late Mr. C. G. Hodgson.

SOUTHERN RAILWAY TRAFFIC DEPARTMENT

The Southern Railway announces the following staff changes in the Traffic Department:—

Mr. W. J. England, O.B.E., Superintendent of Operation, retired from the company's service on March 31.

In connection therewith the directors have approved the following appointments, effective from April 1:—

Mr. S. W. Smart, Assistant Superintendent of Operation, to be Superintendent of Operation.

Mr. S. A. Fitch, Assistant for Train Services, to be Assistant Superintendent of Operation.

Mr. G. W. Jackson, who, on account of the war, has been Joint Acting Sales Manager for the Darlington Forge Limited since July, 1941, has returned to Glasgow to take up his duties as Representative in Scotland of the English Steel Corporation Limited.

Colonel E. T. Brook, C.B.E., Officer Commanding, L.P.T.B. Home Guard, and formerly Superintendent of Rolling Stock for the Board, has retired.

We regret to record the death, which is now known to have taken place in an aeroplane accident which occurred in January, of Captain R. H. Bernays, M.P., aged 43, who was Parliamentary Secretary to the Ministry of Transport, 1939-40.

We regret to record the death of Mr. Arthur Burrige, late District Engineer, Boston, L.N.E.R. Mr. Burrige, whose previous employment was in the Engineer's Office at Kings Cross, was appointed District Engineer, Boston, in 1915. On account of an unfortunate accident, his retirement was accelerated, and took place in 1925, at the age of 54.

G.W.R. APPOINTMENTS

The Great Western Railway announces the following appointments, with effect from February 21:—

Mr. R. H. Edwards, Assistant Divisional Engineer, Newport, to be Assistant Divisional Docks Engineer, Barry.

Mr. H. G. Lakeman, Assistant Divisional Docks Engineer, Barry, to be Assistant Divisional Engineer, Newport.

We regret to record the death on March 18, at the age of 73, of Sir George Cochran Godfrey, V.D., B.A., A.M.Inst.C.E., M.I.E. (India), who was Chairman & Managing Director of the Bengal-Nagpur Railway Co. Ltd., and who recently had been appointed a liquidator for the purposes of the voluntary winding-up of the company in connection with the agreement with the Secretary of State for India for the termination of its contract for the working of the system on September 30, 1944. Sir George Godfrey was born on September 27, 1871, and was educated at Harrow, and at Trinity College, Cambridge, where he took his engineering



The late Sir George Godfrey
Chairman & Managing Director, Bengal-Nagpur Railway Co. Ltd., 1942-44

degree. He then served under Sir Robert Elliott-Cooper on the construction of the Lancashire, Derbyshire & East Coast Railway. In 1895 he joined the Bengal-Nagpur Railway as an Assistant Engineer. He became District Engineer in 1898, and Personal Assistant to the Agent & Chief Engineer in 1901. He subsequently was appointed Secretary to the Agent, and then Deputy Manager, and in 1911 he became Agent. From 1917 his services were lent to the Government of India as Member of the Railway Board, and Coal Controller for India, until 1919, when he returned to the Bengal-Nagpur Railway. He served on the Indian Railway Committee, 1920-21, and on the Howrah Bridge Committee, 1921-22. He retired from the position of Agent of the Bengal-Nagpur Railway in 1925, and ten years later joined the board of the company; he succeeded the late Sir Trevredyn Wynne as Chairman & Managing Director in 1942. Sir George Godfrey served on the Legislative Council, Bengal, from 1923 to 1925, and on the Council of State, India, from 1928 to 1930. He was a partner in Bird & Company, Calcutta, from 1925 to 1931, and at the time of his death was Chairman of Foster, Yates & Thom Limited, and of Sir George Godfrey & Partners Limited. He was

knighted in 1919. Further reference to Sir George Godfrey's career is made in an editorial note in this issue.

Mr. W. J. Privett, Chief Clerk to the General Manager of the Derwent Valley Light Railway, York, retired on March 31, after having completed 53 years' railway service. He commenced his service with the London & South Western Railway in 1892, and in 1900 joined the Central London Railway as Clerk-in-Charge. In 1905 he took up the position of Inspector & Canvasser of the Mid-Suffolk Light Railway, which he left in 1913 to take up his position with the Derwent Valley Light Railway, York.

We regret to record the death on March 27 of Mr. James Baird, Managing Director of Clifton & Baird Limited, Machine Tool Manufacturers, Johnstone, Renfrewshire.

We regret to record the death on March 23, at the age of 63, of Mr. H. W. E. Hall, Manager of the Sheffield Office of the British Thomson-Houston Co. Ltd. Mr. Hall for many years occupied responsible positions at the Sheffield Office; he was Chief Assistant to Mr. A. Lucas, and to Mr. O. S. Nichols, and on the death of the latter he himself was appointed Manager.

L.N.E.R. APPOINTMENTS

The L.N.E.R. announces the following appointments:—

In consequence of the retirement of Mr. G. Marshall from the company's service, Mr. C. K. Bird, Acting Goods Manager, Southern Area, has been appointed Goods Manager, Southern Area. Mr. Marshall will continue to be Chairman of the Goods Committee of the Railway Executive Committee.

Mr. F. C. Margetts, Trains Assistant to the Superintendent, Southern Area, to be District Superintendent, Burntisland, in place of Mr. W. Lyle, retired.

Mr. W. P. Allen, Acting District Goods Manager, Hull, to be Acting District Superintendent, Darlington.

Mr. L. W. Ibbotson, Trains Assistant to the Superintendent & Locomotive Running Superintendent, North Eastern Area, to be Acting District Superintendent, York.

Mr. T. S. Roberts, Head of the North Eastern Area Traffic Officers' Post-War Development Section, to be Acting District Superintendent, Sunderland.

Mr. M. A. Oldham, Chief Rates Clerk, Goods Manager's Office, York, to be Acting District Goods & Dock Manager, West Hartlepool.

Mr. J. F. Wheeler, Resident Manager, Royal Victoria Station Hotel, Sheffield, to be Resident Manager, Royal Station Hotel, Newcastle.

Mr. F. E. Stacey, District Docks Machinery Engineer, Hull, to be Resident Engineer for Traction Work, Chief Electrical Engineer's Department.

Mr. R. B. Waddington, Assistant to the District Docks Machinery Engineer, Hull, to be District Docks Machinery Engineer, Hull.

Mr. W. H. Underwood, Assistant District Locomotive Superintendent, Glasgow, to be Acting District Locomotive Superintendent, Burntisland.

TRANSPORT SERVICES AND THE WAR—288

Access to Restricted Areas

From May 1 the Regional Commissioner for the South-Eastern Civil Defence Region proposes to remove the restrictions on access to Winchelsea Beach, Camber, Pett Level, Shoreham Beach, Pevensey Bay, and Normans Bay. These areas were evacuated compulsorily under Directions made by the Regional Commissioner in 1940. Access to and residence in these areas will be permitted as from May 1, and persons who evacuated the areas under the Regional Commissioner's Direction can return to un requisitioned property from May 1, and

the general condition is unavoidably very much lower now than in normal times. Nearly 1,000 carriages have been converted into ambulance trains and many more have been sent overseas. Others are being used to provide temporary accommodation for transferred industrial workers. To-day there are, therefore, thousands fewer passenger vehicles on British railways than at the beginning of the war.

Food for Liberated Areas

About 3,500 wagon loads, totalling 15,000 tons of Army and hospital-type rations, Arctic pack rations, sugar, edible oils, canned meat, cereals, dried milk, biscuits, chocolate, and dried eggs, for civil consumption in liberated territory, were carried by ordinary G.W.R. service during February and the first three weeks of March.

Dutch Rail Traffic Resumption

Railway traffic with Zealand has been reopened, according to a statement by the Allied-controlled Dutch radio on March 23.

German-Spain Link Broken

A Madrid report of April 2 announced that the last German link with Spain, namely, the air service from Berlin to Barcelona via northern Italy, has been suspended.

Canadian Railway Fares Restrictions Continued

Regulations in effect since August 31, 1942, which eliminated certain reduced fares for civilians, including special convention rates, on Canadian railways have been extended from February 15 to August 15, 1945, as a result of an Order-in-Council issued on the recommendation of the Canadian Transport Controller. These regulations were issued to conserve steel, oil, coal, and other vital materials, and to facilitate the movement of war supplies and of the Armed Forces on duty.

The prohibition against reduced fares does not apply to members of the Armed Forces when travelling home on annual or embarkation leave. Such travellers do not have to pay more than \$15 for the round trip, no matter how far their homes may be from the point of departure. The Federal Government makes up to the railways the balance of the cost. For ordinary leave, Servicemen continue to travel on a return ticket for the price of a single fare.

The Ludendorff Railway Bridge at Remagen

Many points of interest attach to the now world-famous Ludendorff railway bridge at Remagen, which enabled the Americans to make the first Allied crossing of the River Rhine, to Erpel. It crossed that section of the river between Cologne and Koblenz which had seen the passage of many invading armies during the past 20 centuries, since the first recorded military crossing by Caius Julius Caesar in the late spring of 55 B.C., or exactly 2,000 years ago; the first Rhine bridge of which record has survived, a substantial timber structure, was built by Caesar in 10 days for this crossing.

The building of the Ludendorff Bridge was begun as a war measure in 1916 to facilitate the flow of German troops to the Western Front, but the bridge was not completed until 1918, and its main work was to carry the German troops in retreat towards the end of the First World War. The bridge was 1,860 ft. long, and carried a double line railway and a footpath. Its peacetime value was comparatively slight, as there was little east-west rail traffic in

this area, and the main flow was north-south upon railways which run parallel with both banks of the River Rhine.

The first Americans to reach the bridge were a combat command under Brigadier-General William Hoge, who ordered patrols across without a moment's hesitation. The bridge had been left intact, according to the Germans "by accident or chance," and the Americans were just in time to prevent the demolition and remove the detonation charges. U.S. First Army forces advanced at 4.30 p.m. on March 7 and established the first Allied bridgehead across the river. As their requirements were for a road bridge, they slewed the tracks at the western approach and laid a road across.

German Sleeping Cars

Until recently a very limited number of sleeping cars was still operating in Germany. The few remaining sleeping-car services were operated last on the night of January 22-23.

French Railway Services

Train services on the main line between Paris and Lyons were resumed on February 7, after the completion of the repairs lasting more than five months, of the extensive destruction wrought by the Germans on the 36-mile section between Dijon and Les Laumes-Alésia. Among other things, the Blaisy-Bas Tunnel, 20 miles to the south-east of Les Laumes-Alésia, had been blown up.

The first public train service between Paris and Lyons left Paris on February 12, according to the French radio. It was routed via Orleans.

Railways Destroyed in Croatia

Our Balkan correspondent states that more than 1,000 km. of railway lines have so far been destroyed by the National Liberation Army in Croatia, excluding those lines which are only temporarily out of order. The entire railway network is disorganised, and the Germans have to use badly damaged roads for their transport. There is only one line left to the Germans of which they can still make part use. This line is the one from Zidani Most via Zagreb towards Belgrade, but the traffic on this line has proved extremely costly to the Germans.

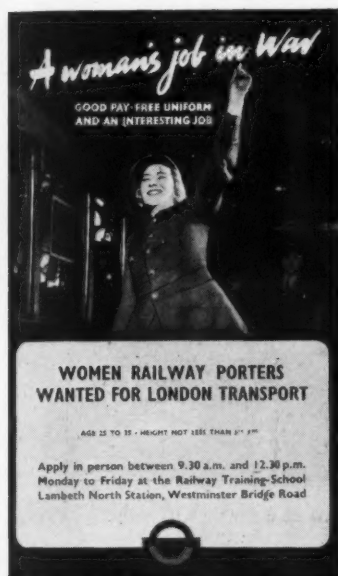
All lines leading to the Adriatic coast have been put out of order. The following lines, according to the list published by the High Command of the National Liberation Army, were completely wrecked: Ogulin-Gospic-Knin Split; Perković-Sibenik; Split-Sinj; Karlovac-Ogulin-Sušak; Karlovac-Petrinja; Vrbovec-Križevci-Koprivnica-Kloštar-Virovitica-Našice; Suhopolje-Bastaji-Daruvar-Pakrac; Banova Jaruga-Lipik; Bjelovar-Grubišno Polje; Grđevac-Garešnica; Čačinci-Voćin; Našice-Pleter-nica; and Požega-Velika. Between Karlovac and Ogulin, the Globornik Bridge has been blown-up. The only remaining locomotive on this line has also been destroyed.

As recorded in our February 2 issue (page 120), some of these lines have since passed into the hands of Marshal Tito's Forces, and are being restored.

Zürich Air Traffic in 1944

In 1944, the aerodrome of Dübendorf (the Zurich airport) dealt with 750 regular traffic flights, conveying 2,355 paying passengers and 337 gratis passengers. Payload handled totalled 29.6 metric tons; luggage aggregated 64.2 metric tons, including 22.2 tons excess luggage; and air mail totalled 61.7 metric tons.

The operation of the regular Swissair



Included in the series of Reichsbahn advertisements for staff which we reproduced in our February 2 issue (page 119) were five for women. Above is the comparable poster of the London Passenger Transport Board seeking women railway porters

to requisitioned property from the date of de-requisition, of which they will be notified individually. Applications for permission to return before that date will also be considered, and facilities will also be given for inspecting the state of un requisitioned or de-requisitioned properties.

Peace Traffic Prospects

Any reduction in war traffics resulting from an early peace in Europe is likely to be more than offset by the increased movement of coal during the summer, by the transport of vast quantities of building materials for housing, by the despatch of food, clothing, machinery, and other goods for the rehabilitation of Europe, and by increased industrial traffic resulting from the changeover from war to peacetime production. The demobilisation and the redispersion of the fighting forces will also place a tremendous strain upon all transport services.

Although the British railways will doubtless do everything in their power to improve passenger services, no material increase in holiday travel facilities can be expected. Since the outbreak of war many thousands of passenger vehicles have been destroyed or damaged by enemy action. The rest have had to remain in traffic for long periods without adequate repair, and

service between Zürich and Stuttgart was discontinued on August 18, 1944, a few days after the destruction of a Swissair machine on the Stuttgart aerodrome in the course of an air raid. Up to that date, the Swissair service accounted for 383 flights, comprising 1,985 passengers, 60.1 metric tons of air mail, and for the whole of the luggage and freight traffic mentioned above. In addition, Swissair planes had been responsible for 35 special flights with 200 gratis passengers, 30 "whooping cough" flights, 370 special flights for children and persons accompanying them, and for the conveyance of 715 kg. of air mail in connection with the company's Jubilee Zürich-Geneva flight on September 20, 1944.

North-Milan Service Curtailments

As a result of the stringent shortage of coal in the Milan region, the steam-worked train services on the Nord-Milano system were reduced to one train a day in each

chain of communications throughout East, North, and South Africa, was carried out with a very small increase in rolling stock. The railways and harbours played a rôle of the first importance in the Abyssinian campaign and, since then, after East Africa began to be used as a training base for troops to be used in the war against Japan, they have continued to play a vital part in providing transport facilities.

Suspension of U.S.A. Freight Rate Increases

For the second time, the Interstate Commerce Commission of the United States has suspended the increase of freight rates granted to the railways on and from March 18, 1942, as some compensation for increases in the cost of labour and materials. This increase, which was less than the percentage claimed by the railways, was due to expire six months after the end of the war,

members of the staff have been recruited in this way. The most successful "recruiting sergeant" has been Mr. W. D. Peters, chief clerk of the Police Department at Allentown, Pennsylvania, who, after securing nine entrants, all of whom duly completed 30 days' service (the condition of the award), went out and obtained eight more, a total of seventeen. In all, the company has now paid \$1,495 in awards, and the offer is still in force.

Spreading U.S.A. Locomotive Orders

At the request of the United States Government, the Baldwin Locomotive Works, which now has on order a large number of locomotives to Government order for wartime service, is placing sub-contracts for locomotive parts with several hundred smaller firms. The orders are for complete boilers, ashpans, tender frames, cabs, cylinders, connecting rods, valve-motion forgings, and minor parts such as



A captured German self-propelled gun vehicle adapted by U.S. Army Engineers for use as a shunting locomotive

direction as from February 1. This is a serious blow to the densely-populated districts between Milan and the Swiss frontier served by the Ferrovie Nord-Milano, the second-largest privately-owned system in Italy. In addition to being intensively industrialised, the region concerned comprises a number of dormitory towns from which large numbers of workers pour into Milan every morning.

Canadian Armoured Train

Recently, it has been announced publicly that an armoured train was built at the Transcona (Manitoba) Shops of the Canadian National Railways in the early part of the war; Transcona is 8 miles east of Winnipeg. This armoured train consisted of an armoured locomotive equipped with a diesel engine unit, and four vehicles. It was worked with the locomotive in the middle, and two vehicles at each end. Guns were mounted on each end. The train was used for a long period in British Columbia, but last year, when the menace of a Japanese invasion was lifted, the train was broken up and its rolling stock returned to normal service.

War Work of Kenya Railways

Some idea of the part played by the Kenya & Uganda Railways & Harbours in maintaining vital links of communication during the war, is given by figures recently published in Kenya. The tonnage carried in 1943, for instance, was 2,665,530 tons, compared with 1,747,279 in 1939. Total passenger journeys, exclusive of military passengers carried by special arrangement, reached the figure of 2,745,229 in 1943 compared with 1,012,312 in 1939. This great increase in passenger and goods traffic, which maintained an essential link in the

but on May 14, 1943, largely in consequence of demands by the Office of Price Administration, the increase was suspended until January 1, 1945. In the middle of December last, the I.C.C. decreed a further year's suspension, to operate until January 1, 1946, and, although the proceedings are not being regarded as closed, as such a closure would prevent either side from making a further request should conditions change substantially in the ensuing twelve months, if such action is not taken freight rates will continue at their pre-war level until further notice. The I.C.C. has declined, however, to alter passenger fares, which were increased by 10 per cent. on February 10, 1942, by authority of the Commission.

Further American Hospital Cars

A total of 150 additional hospital cars is on order for the United States Forces, 100 for the Army and 50 for the Navy. The American Car & Foundry Company is to build 100 of these, as recorded in our March 30 issue, page 329. The remaining 50 Army cars have been ordered from the Pullman-Standard Car Manufacturing Company; this order will be carried out at the company's Calumet plant, in Illinois, after completion of a Navy order for patrol craft and landing ships.

A Reward for Recruiting New Employees

To help in meeting the present acute wartime shortage of railway staff, the Jersey Central Railroad of the United States some months ago offered a reward of \$5 to any employee who succeeded in enlisting another worker for the line. The plan has been so successful that 299 new

dome casings, steam-pipe rings, and reverse links. Since the great need for additional locomotive power developed early in 1943, Baldwins searched the industrial areas of the east and middle west for firms capable of turning out locomotive parts, and assigned trained representatives to each selected works to instruct managements and foremen in the Baldwin requirements. Every such representative remained as long as was necessary to get production well established. The aim of this scheme is to aid small business on as widespread a scale as possible, and so to spread employment evenly.

More Wage Demands by Chicago Railwaymen

In November last, a strike of motormen, conductors, collectors, and brakemen took place in the Chicago, North Shore & Milwaukee, and the Chicago, Aurora & Elgin Railroads of the United States, two inter-urban electric lines of which the former is specially noted for the high speed of its trains, including the "Electroliner" streamliners. An emergency board, to which the dispute was referred, recommended an increase of 5 cents an hr.; this was accepted, and the men returned to work on November 17. Now, however, new demands have been made by the Brotherhood of Railroad Trainmen and the Brotherhood of Locomotive Firemen & Enginemen, to which the railways on December 5 refused to accede. The demands are for increases ranging from 12½ to 16½ cents an hr., which would raise the pay of motormen and conductors to 113½ cents, and that of ticket collectors and freight brakemen to 97½ cents an hr. The unions have now asked for mediation on this additional demand.

Mansion House Association on Transport

Mr. Bevin's address at annual luncheon

The annual general meeting of the Mansion House Association on Transport was held at the Connaught Rooms, London, W.C.2, on March 21. It was preceded by a luncheon, at which the Rt. Hon. Ernest Bevin, M.P., Minister of Labour & National Service, was the chief guest. Mr. W. H. Gaunt (President of the Association) was in the chair.

Among those present were: Messrs. J. Abady (Acting Registrar, Railway Rates Tribunal); F. E. Bailey (District Passenger Manager, L.M.S.R. Manchester); M. P. Barnard (British Iron & Steel Federation); Rt. Hon. E. Bevin, M.P. (Minister of Labour & National Service); Messrs. C. A. Birchall, C.B. (Principal Assistant Secretary, Ministry of War Transport); F. G. Bristow, C.B.E. (Director, National Road Transport Federation); A. L. Castleman (L.M.S.R. District Goods Manager, London); G. Cole Deacon (Secretary, Railway Executive Committee); F. W. Crews (Secretary, Institute of Transport); R. B. Dunwoody, C.B.E. (Secretary, Association of British Chambers of Commerce); Sir Frank Pierson (President, Town Planning Institute); Sir Henry French, K.C.B., K.B.E. (Secretary, Ministry of Food); Messrs. E. G. Garstang (District Goods Manager, L.M.S.R. Manchester); W. H. Grant, C.B.E. (President, Mansion House Association); Sir Arthur Griffiths-Boscawen (Transport Advisory Council); Sir Reginald Hill, K.B.E., C.B. (Deputy Director General, Ministry of War Transport); Sir Godfrey H. Ince, K.B.E., C.B. (Secretary, Ministry of Labour); Messrs. D. R. Lamb (Deputy Director of Transport Ministry of Food); F. W. Lampitt (Chief Goods Manager, G.W.R.); Sir F. W. Leggett, C.B. (Ministry of Labour); Mr. Wm. Mabane, M.P. (Parliamentary Secretary, Ministry of Food); Sir Ronald Matthews (Chairman, L.N.E.R.); Sir Eustace Missenden (General Manager, S.R.); Sir Harold Morris (Chairman, Industrial Court); Messrs. J. S. Nicholl, C.B.E. (Road & Rail Central Conference); Gleeson E. Robinson, C.B. (Regional Traffic Commissioner, London Region); H. T. Schierwater (President, Chamber of Shipping); A. E. Sewell (Road & Rail Central Conference); R. W. Sewill (Road & Rail Central Conference); G. F. Stedman (Assistant Secretary, Ministry of War Transport); G. N. Wilson (Chairman, British Road Federation); Sir William Wood (President, L.M.S.R.).

Mr. Gaunt, in welcoming the guests, said that it was the 63rd annual meeting of the Association. He believed that it had served a useful function in assisting to settle many difficult problems associated with transport. During the past year that body had set out its views on the future of transport, and to assist the Ministry of War Transport it had combined its report with those of the F.B.I. and the chambers of commerce. He felt that the sooner serious consideration was given to post-war transport policy the better. It was a very important matter, and he hoped that in the future it would be possible to look for a reasonably long transport policy. He believed that the transport service to the public before the war in this country was higher than in any other in the world. It would be necessary to restore this efficiency of service after the war. He drew the attention of Mr. Bevin to the dependence of the railways and the roads on the supply for skilled labour. Much of their plant and many of their vehicles were about at the end of their tether, and he hoped that it would be possible shortly to do something in this connection.

Mr. Bevin said that if the Federation of British Industries, the Chambers of Commerce and the Mansion House Association on Transport had been getting together, to deal with the transport problem, he could only assume that they had decided on the necessity of nationalisation. He was inclined to wonder whether much of the time that had been spent by the Transport Advisory Council and similar bodies in dealing with transport matters, had been justified. In 1922 he had served on a committee dealing with the pooling of wagons and the use of 20-ton wagons. That committee had made an excellent report, but there was still no peacetime pooling of wagons and little use of 20-ton wagons. Then a very long time had been spent on the square deal proposals. They had been very anxious to give a square deal to the late Lord Stamp, who, it was said, when he was asked why L.M.S.R. trains did not run punctually, had said: "I leave the punctual running of trains to the drivers and guards. I get on with the statistics." Then there had been a Wages Bill for the road industry. Seven years had been spent on this Bill, which was designed to make road transport operators honest. It had gone through all right, and nobody understood the Bill, although he assured them that it was a very good Bill.

He did not know what would be the outcome of the General Election, but he had not abandoned nationalisation of major industries. He could not see any future for cheap transport in this country unless all the receipts went into a pool. He did not believe that one could build up the present system of this country on present transport charges. He thought some of them were too high, and some were too low, but the average had not been struck properly.

He had agreed to the inclusion of the railway companies in the civil aviation plans with misgivings. He wondered whether they would get on the boards working directors with knowledge of the

job and keen on it, or whether they would be placed there because they put much traffic on the line.

A crisis never arose between the State and an industry if the industry was efficient and cheap.

He would never have allowed railways to be dock owners. Dock-owning and operating needed a different outlook, and a different mind, and a different approach from railway operation. He would make terminal charges uniform for every port, because he felt that differential charges interfered with the natural flow of traffic.

Mr. William Mabane, Parliamentary Secretary of the Ministry of Food, said that in common with the members of the Mansion House Association on Transport, the Ministry of Food was a large user of transport. Great economies had been made both in food and transport during the present war, and this had enabled the best use to be made of the limited supplies of food available.

Sir Reginald Hill, Deputy Director General of the Ministry of War Transport, said that transport had been a vital factor in the change which had been achieved in the war. The full story of the transport preparations for the assault on Europe and the several rôles played by the established transport media would be of great interest when it could be told. There had been a 140 per cent. increase in passenger-train loading during the war and increases in the net ton-mileage of the order of 98 per cent. for merchandise traffic, 54 per cent. for mineral traffic and 11 per cent. for coal. It had been indeed the determining factor in enabling the Allies to concentrate superior power at the decisive point, which was the key to victory. They had all learned many lessons of co-operation during the war, and it might be that they would be able to approach transport problems after the war in a different spirit.

Isle of Man Railway Company

The ordinary general meeting of the Isle of Man Railway Company was held at the offices of the company on March 14. Mr. R. Q. Hampton, M.H.K., Chairman of the company, presided.

The Chairman, in the course of his address, said: In 1940 we were in a very difficult position; the decrease in ordinary traffic and the absence of any other to take its place made it an anxious and indeed a critical period. If the operation of the company's services were to be cut or suspended, it meant at least some dispersal of the staff and a grave dislocation of the company's business. Also, the public would have suffered inconvenience and hardship. Our position was inherently sound but our liquid resources were insufficient to carry on indefinitely. We had to defer payment for some time of the half-year's debenture interest due December 31, 1940. We could have asked under the War Emergency Regulations for a postponement or moratorium, but your directors were concerned for the prestige the company's debentures always have enjoyed. The delay in this payment was not a long one, and it has been a source of great satisfaction to the board that events have justified its decision.

The receipts from passenger traffic, £62,875, are approximately what we earned in our good years after the last war. Mails stand unchanged, at the figure of £600. Parcels, horses, carriages—which incidentally includes bicycles and

perambulators in railway definitions—are increased, but the large amount of £12,293 for carriage of merchandise, minerals, etc., gives a true insight into the increased effort the system has had to bear, as well as a yard-stick to measure the immense amount of work that has devolved upon us. It has been, and still is, very arduous, and in some ways unprecedented; but we have not failed in any vital particular, in any of the tasks so unexpectedly laid on us by the grave emergency of war. The number of passengers carried included a certain percentage of Services personnel. We have been collecting, storing, and distributing in connection with Government schemes of food supply, handling various requirements for national purposes and other goods, heavy and light, in what in normal times would have been comparable to a seasonal rush, but in this case has been a regular weekly traffic, making a steady and sustained demand upon all our staff and resources.

The total of traffic receipts (including rents and transfer fees), £84,500, has entailed an increase in expenditure due to intensive running as well as increased costs of materials, but after deducting working expenses there is a balance carried to net revenue of £20,399. Added to which we have interest from investments, £4,755; general interest £110; and the balance brought forward from the previous year of £1,862. There is a total of £27,126, which after deduc-

tion of the £7,000 debenture interest, £198 rent charges, and £12,000 placed to credit of renewal funds, leaves a disposable balance of £7,928 to be carried to the general balance-sheet.

Your directors recommend the payment of 5 per cent. on the preference shares of the company—taking £2,500, and a dividend of 2½ per cent. on the ordinary shares—an amount of £3,500, both being at the same rate as last year, a total of £6,000, leaving £1,928 to be carried forward to the next accounts, being an increase of £66 over the amount brought into the year's sheet.

The absence for two years of any statement of accounts has prevented shareholders from following the company's progress, and I would like to point out here that the amounts placed to reserve, although in the aggregate apparently large, are not appreciably more than we would have normally spent on maintenance, in view of the intensive

running, had it been possible to procure necessary material and labour. They are really a deferred maintenance provision. The greatly accelerated wear and tear of the past four years' working, and the uncertainty of post-war development in regard to the Island's visiting industry, make it very difficult to say at what rate and to what extent we can accomplish this.

It is well known to shareholders that for a long time the problem of progressive modernisation has exercised the minds of the board, and we have constantly hoped to be able to cope with it. The lack of funds, the greatly enhanced cost of labour, materials, etc., debarred us from any large-scale efforts, but we trust now that in making renewals we may accomplish improvements towards this long-desired goal.

I can, in conclusion, most wholeheartedly pay a tribute to our staff. During not only the last but in the whole

of the war years, your directors recognise with gratitude the willing service of all members of the staff in the company's employ. They have demonstrated not only their loyalty to the company but also their loyalty to their comrades who are in the Forces (of which we have nearly 100 from the joint companies) and to the war effort, towards which all our energies necessarily have been bent. We especially commend our Manager, Mr. Sheard, for his efficient handling of many unexpected problems, for his resourcefulness and ability at improvisation, and he, I know, will gladly assign praise as well as part of the success of his own efforts to his accountancy, audit, engineering, traffic and permanent way chiefs, and to the stationmasters and all members of the staff who have worked so well and given such loyal and efficient service to the company.

The report and accounts were adopted.

Parliamentary Notes

Railways and Civil Aviation

Sir Stafford Cripps (Minister of Aircraft Production) opened a debate on the Government's proposals for civil aviation after the war in the House of Commons on March 20. He said the White Paper set out the scheme which the Government put forward as being the best and most appropriate in existing circumstances. One general principle was that civil aviation must be regarded essentially as a transport service. It suffered in the past in this country because the aviation side had been over-stressed compared with the transport side, that the technique of transport had been sacrificed to the technique of aviation. Another general principle on which it insisted was that no permitted service should be allowed merely to skim the cream of the traffic, leaving the unremunerative routes either uncatered for or else to be run at a loss by the help of a subsidy by the Government. There was nothing static in the plan suggested. Indeed, it was contemplated that new routes would be required beyond those originally laid down, and that those would not necessarily be given to any of the existing corporations.

In the view of the Government a single corporation could not economically and efficiently carry out the entire task that lies before British civil aviation. It had, therefore, elected for three chosen instruments to begin with, each one constituted in the way that seemed most likely to mobilise the maximum range of experience and knowledge for the carrying out of its job.

Dealing with the combination of internal and European services in a single group, Sir Stafford said there was a very great convenience to passengers if they could use a ticket by air, rail or sea according as the weather conditions or their own immediate convenience might dictate. The British railways, with long experience of internal and Continental travel, with all their agency arrangements all over Europe, and the short sea shipping lines which equally had served European traffic, had obvious contributions to make in transport technique.

It had been suggested quite widely that rail and shipping might not be anxious to develop air transport and that they should not, therefore, be associated with an air transport corporation. That argument might perhaps have been valid before the war, when the wide extension of air services was still in doubt, but now that there was no question in anybody's mind at all that

people would travel by air, all those interests, he thought, realised that they could only meet air competition by air transport. Ever since Parliament, which was the responsible body, gave the railway companies the right to run air services, the railways had done a great deal to develop air routes, and he was quite confident that there was no danger of their trying to use their position in the Air Transport Corporation to suppress air travel. However, to guard against the possibility of such a thing, the Minister would have the power to approve, or not to approve, any nominations for the directorate of the Air Transport Corporation, so as to ensure an energetic and air-minded team of directors. It must also be borne in mind that the very considerable capital required by this corporation was to be subscribed by the various interests concerned, that there was to be no subsidy at all, and that the subscribing interests would be prohibited from selling their shares. Moreover, it must be remembered that the corporation would be compelled by law to maintain the scheduled services, and any other services placed on it by the Government. It seemed to him perfectly certain that the directors would be compelled to do their utmost to make the services a success.

Mr. F. Montague (Islington West—Lab.) said he would like to know what the shipping and railway companies had to give to civil aviation in this country. The question of developing civil air transport was surely a bigger thing than giving monopolies to shipping and railway companies because they could run travel agencies or something of that kind.

RAILWAY EXPERIENCE

Sir Oliver Simmonds (Birmingham, Duddeston—C.) said that surely Mr. Montague would agree that the railway and shipping companies, for many long years, had had to do something that B.O.A.C. never had had to do. They had had to make ends meet. The B.O.A.C. was costing the British taxpayer, even when it received payment for all the services it rendered in the carriage of passengers, mails and goods, both military and civil, many millions of pounds sterling a year. For the past two years he had been Chairman of the Joint Air Transport Committee of the Federation of British Industries, the Association of British Chambers of Commerce and the London Chamber of Commerce,

and that committee represented exclusively users of air transport throughout British industry—neither the operators nor the manufacturers of air equipment. It had a number of sittings with representatives of the railways and shipping companies, and throughout its discussions the committee found there was a single-minded desire to render service in the air transport era. Certainly they wanted to make a profit, and he would say that if they did not they ought to keep out, and that, unless they were going to try to make a profit, it meant that the air transport side would be relegated to a side which they would have to put under other and less efficient and less competent hands. When representatives of the railway companies came on several occasions before the Joint Air Transport Committee, their first emphasis was that they asked for no monopoly, and he saw that it was in the White Paper that, in fact, they did not ask for any monopoly or subsidies. The monopoly was forced on them by the White Paper. He thought it was a great mistake that there should be any monopoly area within the White Paper scheme. Outside this country, clearly, we were competing with the foreigner, but why could not we have some internal competition? Why not amalgamate the knowledge of several firms which had done brilliant work and bring them together to form a strong Scottish airlines company to give the railway and shipping companies associated with them in the European zone a degree of competition within the British Isles?

Mr. Henry Brooke (West Lewisham—C.), who is a director of the Southern Railway Company, said he thought it right that the House should have on record an authoritative statement about the railways' position.

In reply to Air Commodore W. Helmore (Watford—C.), Mr. Brooke said that he could say, unreservedly, that it was the intention of the railway companies, when these new corporations were formed, to give first priority to operational air crews in their recruitment policy. All bodies taking part in these new corporations would have certain reinstatement obligations to their pre-war employees, and it was right that that should be recognised and acted on. Subject to that, it was the full desire of the railway companies to obtain as many suitable men from the R.A.F. as they could. The railway companies were fully seized of the immense value of R.A.F. training in the civil aviation work that lies ahead.

The railway companies were dead keen to make a success of whatever opportunities

the House decided to give them in the air. They were, before the war broke out, responsible for operating 80 per cent. of the internal air lines. Nobody could say that they had not taken their opportunities, and nobody could say that they had not got a considerable and important body of experience to contribute.

Mr. G. Buchanan (Glasgow, Gorbals—Lab.) said he had to travel occasionally in railways. The railway companies ran hotels, steamships and all kinds of things; now they were going to run aircraft. He wondered all the time when they were going to start and run decent railways.

Mr. Brooke said that the railway companies were not going to run aircraft. They were being asked to take a share in a corporation that would run aircraft, and theirs would be a minority share. The railways knew perfectly well that air travel in this country could succeed only if it was done on what he might call a popular basis, a broadly commercial basis, not for the few, but for the many. They recognised that and wanted to act up to it. Some Members had suggested that the railway companies' interest would be to kill air travel. If that were the case, the railway companies would certainly object to a Government scheme which gave them only a minority interest in a corporation, for no minority interest could determine what a corporation did. The railway companies had never operated their air services in such a way as to make them secondary to the prosperity of the railways. Let him give an example. The service to the Channel Islands was being run by an independent company. That passed to the control of the railways. What did the railways do? They immediately ordered better aircraft, and within a year the number of passengers by air to and from the Channel Islands increased from something like 19,000 to 34,000.

An important question was whether it was desirable in the plan to mingle the European and the internal services together, or to keep them separate. He would have said there was an overwhelming case for managing these two together. There would be a great deal of travel to and from the Continent which would not originate in London or end in London. People would wish to travel from the North direct to France, or from France direct to the Midlands or to Scotland. If separate corporations were set up, London inevitably would be made the one big terminus and the focal point of all cross-Channel services. In everybody's interest, and especially in the interests of those who lived in the more distant parts of the country, they were anxious to arrange that London did not have a monopoly of service. The railway companies wanted Scotland to have its full share, however Scotland got it.

One of the greatest factors of importance in civil aviation was safety. The railway companies could not be challenged on their record for safe travel, either by sea or air. During the war the railway-owned air services had carried some 300,000 passengers without the loss of a single life, except by enemy action. That was a record of which the railways might be proud.

The White Paper was relatively vague about the safeguards for efficiency in the new corporations. It spoke of a tribunal to which people would be able to go if they considered that rates were unreasonable, or that unfair preference was being given. He hoped that whoever replied to the debate would be able to define more clearly what was in the Government's mind, how he expected the tribunal to work, and what criteria it would apply.

The railways were to risk a great deal of money in this scheme. It was to nobody's

interest more than their own that the corporation should operate efficiently, and because they and all the participants in the scheme would be risking money, surely a considerable degree of freedom of management should be given to these new corporations. He was a little disturbed by one phrase which the Minister used. He spoke of the tribunal taking up any matters which might escape the eye of the Minister. He (Mr. Brooke) had not visualised the working of these corporations as being under the constant, scrutinising eye of a Minister. He would much rather that the Minister should approve the first directors who were appointed, and that then they should have to stand on their own feet, so that it was up to them, and they bear the full responsibility and have to make a success of it, and if they failed they must go out. The Minister said he wanted to make sure that he would secure an energetic and air-minded board of directors. From the record of the other participants, from the stake they were proposing to put into these new corporations, surely it was obvious that they would be all out to appoint the most competent men they could find for these jobs.

Mr. J. B. Hynd (Sheffield, Attercliffe—Lab.) said that the White Paper told them that the Government was determined that there should be no vested interest. What else was this but a concession to the established vested interests of the largest capital concentration in this country and, possibly, in the world—the railway and shipping companies of this country? They said there was to be protection against vested interests because there was to be no right to transfer holdings. It meant that a railway company was not to be in the position to offer the whole of its holdings to some other private company, say, a greengrocer or somebody like that, but the real individual shareholders who contributed to those holdings could transfer their shares any time they liked on the stock market. Similarly, they were told that the railway and shipping companies should bring in their vast experience of foreign travel into this scheme, but who had this experience? It was not the railway shareholders or even the directors who had experience in handling booking offices and travel agencies, driving trains or catering, but the administrative staff, the workers. What was there to prevent the Government, if it had the responsibility of a common public service, advertising and securing the services of those people who could serve the State as well as they could serve private owners?

CHOSEN INSTRUMENTS

Captain L. F. Plugge (Chatham—C.) said they were told that there were three chosen instruments but were there truly three, or were they not really just one? By a trick of words and of hand, the Government acquired from outside subsidies for the B.O.A.C. To secure that it had simply called in the railways to bring forward the finance even without granting a reasonable degree of control. It had asked the railways, which possessed large sums of money in reserve, to put up the capital and to risk the financial side of the enterprise of B.O.A.C., the really only chosen instrument. B.O.A.C. was a majority holder in the whole group of the three branches of the chosen instruments that formed in reality only one chosen instrument, and a mere continuation of the B.O.A.C. of pre-war sorrow.

The railways which were helping towards the enterprise really were just contributing in the way of finance. Their directors were not allowed to be elected freely, they were subject to the veto of the Minister which, in reality, would mean the veto of the

B.O.A.C. They might be quite sure that the B.O.A.C. which was so closely allied with the Government to-day would see to that. If the chairman of the B.O.A.C. were to say: "I do not like that particular man who has been put forward by the railways," then the Minister also would say that he did not wish that man to be on the board. The three-branched chosen instrument would be entirely controlled by the B.O.A.C.

Major B. H. Neven-Spence (Orkney & Shetland—C.) said he was not impressed by the past history of the railway companies in civil aviation. They obtained their first powers in 1929, but did nothing about it. A number of independent operators got busy and did quite a lot. Then the railway companies woke up, and in 1933 they started a few experimental services. They then began to do all they could to throttle the independent operators. Among other things, they denied them the use of the booking agencies, which was a great inconvenience, and when they could not freeze them out, they eventually started to buy them out. The position at the outbreak of war in 1939 was that they had acquired seven of the independent operators in this country, and through those acquisitions they controlled four-fifths of the total internal route-mileage. Since the war they had, with one exception, operated all the internal air lines that the Government had required for war or semi-war purposes, the only exception being the Allied Airways Company, which operated from Aberdeen to Orkney and Shetland. The other company that operated in that part of the world was acquired by the railways. There was no question that Scottish Airways, which now virtually was controlled by the railways, had gained some advantages through amalgamation with the railways. He was certain, however, that if the North of Scotland had been left to the tender mercies of the British railway companies there would not have been any attempt to develop an air service to that part of the world.

REPLY TO DEBATE

Mr. A. T. Lennox-Boyd (Parliamentary Secretary, Ministry of Aircraft Production) in the course of his reply to the debate, said that Mr. Montague seemed to regard the proposals as the introduction of railway companies into air transport, but the railway companies were introduced into it in 1929, through the action of Parliament. The railways had considerable experience before the war, and had had substantial experience during the war. They had flown successfully vast distances and carried large numbers of passengers during the war. They had realised that they only could meet air competition in the air. There had been a story in the past of attempts, perhaps, to strangle other forms of competition in the competitive circumstances of the day. But they realised they would only meet competition in the air, and he had little doubt that they would prove in every way competent to grapple with this new competition. The independent operators had got experience, and there was no intention whatever to belittle or to under-value the part they had played in the building up of aviation in past years. Nor was there any intention to deprive themselves or the corporations in the future of their experience. They had not been expropriated without compensations.

Questions had been asked about travel agencies. It was true that three of the great travel agencies had been acquired by the railway companies, but a number of others had not, and he would mention two—Lunns and the Workers' Travel Association—both of which were to co-operate.

Notes and News

Brown, Bayley's Steel Works, Limited.—An interim dividend has been declared on the ordinary shares of Brown, Bayley's Steel Works Limited of 5 per cent. (same).

Mechanical Engineer Required.—A firm of mechanical engineers anxious to extend its activities into the railway field is seeking a qualified mechanical engineer to act as liaison engineer between the company and the railways. (See our Official Notices, page 355.)

The Rhodesia Railways.—The approximate gross receipts of the Rhodesia Railways for the month of January, 1945, were £506,870, and for the four months ended January 31 amounted to £2,068,980 as compared with £521,422 and £2,182,387 respectively for the corresponding periods in the previous year.

Building Board Manufacturers' Association.—An association representing the manufacturers of fibre building boards in Great Britain has been registered recently under the title of the Building Board Manufacturers' Association of Great Britain, Limited. The address is Melbourne House, Aldwych, London, W.C.2. The Association can speak authoritatively for the home producers of fibre building boards and will also disseminate information on the value and uses, as well as the best methods of applying building boards.

Railway Construction in Mexico.—The sum of 20,795,664 pesos (not including central offices expenses) were expended on new railway construction in Mexico during the fiscal period, September 1, 1943, to August 31, 1944, as follows: the South-Eastern Lines, 16,660,440 pesos; Sonora-Baja California, 2,913,911 pesos; and the Chihuahua-Pacifico Line, 1,221,313 pesos. Receipts obtained from the transport of passengers, goods, and by other means in the Allende-Mezcalapa section of the South-Eastern Railway, at present under development, reached 235,258 pesos during the same period.

Proposed Underground Railway for Toronto.—The Toronto Transportation Commission has announced that it has plans for the construction of a rapid transit system, which will include a high-speed underground railway and open-cut lines along Yonge and Queen Streets. There are no underground urban railways in Canada at present. The Yonge Street route would consist of more than 4½ miles of line, from Union Station to Eglinton Avenue in the north, and would be partly underground and partly in open cut. The total cost of the project is estimated at about \$51,000,000. No construction work would be begun until after the war. The project will first be presented to the City Council for approval.

Rohilkund & Kumaon Railway Co. Ltd.—The liquidators of the Rohilkund & Kumaon Railway Co. Ltd. expect a further distribution of £23 per £100 ordinary stock. This would bring capital distribution per £100 ordinary stock up to £388. The liquidators, subject to members' approval of the terms, have now reached a settlement with the Government of India, which has taken over the railway. On both sides claims are relinquished and the company is contributing £29,300 to the provident fund allowed against taxation by the India Revenue authorities. The company will be compensated to the extent of £6,800 for loss of earnings from requisitioned rolling stock. The balance of the purchase price is estimated at £98,680

which, less £13,000 Indian taxation, leaves approximately £84,000, permitting a further capital distribution of £23 per £100 ordinary stock.

Executive Management.—A consulting organisation requires a public school man with university degree possessing experience of executive management and a knowledge of modern production methods. For full particulars, see Official Notices on page 355.

The Beira Railway.—The approximate gross receipts of the Beira Railway for the month of January, 1945, were £75,091 as compared with £80,750 for January, 1944. For the four months ended January 31, the gross receipts amounted to £314,277 as against £296,484 for the corresponding period in the previous year.

British Thomson-Houston Co. Ltd.—The trading profit of the British Thomson-Houston Co. Ltd. for the year ended December 31, 1944, after provision for taxation, is £596,527 (£580,362). After deduction of loan and debenture interest £87,716 (£87,230) and depreciation £228,975 (£226,435), the net profit is £279,836 (£266,697). The preference share dividend at 7 per cent. amounts to £52,500 (same) and £150,000 (same) is put to general reserve. The dividend on the ordinary shares is at 7 per cent., less tax for the year. The amount carried forward is £255,704 (£248,368).

Penny-a-Week Fund Exhibition Coach at Kings Cross.—On March 22, Lord Iliffe (Chairman of the Duke of Gloucester's Red Cross & St. John Fund) opened at Kings Cross Station, L.N.E.R., the Red Cross Penny-a-Week Fund Exhibition Coach which, as recorded in our January 12 issue, is making a 4,000-mile tour of leading cities and towns in this country. Lord Southwood (Chairman of the Red Cross Penny-a-Week Fund) said that special thanks were due to Lord Royden and the management of the L.M.S.R. for the loan of the coach, and to the three other main-line railways for operating it without cost. Mr. C. G. G. Dandridge, Passenger Manager, Southern Area, L.N.E.R. (who represented Sir Charles Newton, Chief General Manager, L.N.E.R.) on behalf of the directors and management of the company welcomed the coach to Kings Cross. The journey of this coach, he added, they considered to be "really necessary." Lord Iliffe, Mrs. Winston Churchill, Miss Greta Richards (the Railway Queen), and Mr. H. Lane, Organiser, National Union of Railwaymen, also spoke. Others present included:—

G.W.R.: Major J. Dewar, Publicity Officer; L.M.S.R.: Mr. G. H. Loftus Allen, Advertising & Publicity Officer; L.N.E.R.: Messrs. George Dow, Press Relations Officer, H. C. Johnson, Assistant Superintendent (Western Section), Southern Area, L. J. Moorcock, London District Passenger Manager, W. E. Green, District Superintendent, Kings Cross, H. M. Collings, Acting London City Manager, H. J. Lockwood, London Cartage Manager, and F. W. Goring, Stationmaster, Kings Cross; Southern Railway: Mr. E. Uzzell, Welfare Officer.

Assam Railways & Trading Co. Ltd.—Consequent on the decision by the Government of India to purchase the railway system of the Assam Railways & Trading Co. Ltd. for £1,770,000, the company proposes the redemption of the £1,000,000 5½ per cent. debenture stock. As the above transaction was not a compulsory purchase and the directors were not desirous of winding up the company, negotiations were entered into with the trustees for the stockholders and the investment trusts and

insurance companies. As a result, the company has offered to redeem the stock at a premium of £8 for every £100 stock, which is considered as a reasonable proposal by the trustees for the stockholders.

Canadian National Railways.—Gross earnings for February, 1945, amounted to \$31,229,000 (\$33,874,000), a decrease of \$2,645,000 in comparison with January, 1944. Operating expenses were \$28,133,000.

British and Irish Railway Stocks and Shares

Stocks	Highest 1944	Lowest 1944	Prices	
			April 3, 1945	Rise/ Fall
G.W.R.				
Cons. Ord. ...	62½	55	58½	+ ½
5% Con. Pref. ...	122½	114½	115½	- ½
5% Red. Pref. (1950) ...	110½	104	105	- ½
5% Rt. Charge ...	135½	128	134½	+ ½
5% Cons. Guar. ...	134½	125	132½	- ½
4% Deb. ...	118½	112½	116½	- ½
4½% Deb. ...	118½	114	118½	- ½
4½% Deb. ...	124½	119½	122½	- ½
5% Deb. ...	137	129½	136½	- ½
2½% Deb. ...	77	73½	75½	- ½
L.M.S.R.				
Ord. ...	34½	27½	29½	+ ½
4% Pref. (1923) ...	64½	55½	58½	- ½
4% Pref. ...	81	72½	77	+ ½
5% Red. Pref. (1955) ...	105½	102	104	- ½
4% Guar. ...	107½	99½	102½	- ½
4% Deb. ...	111½	104	108	- ½
5% Red. Deb. (1952) ...	111	108	109½	- ½
L.N.E.R.				
5% Pref. Ord. ...	10½	7½	7½	- ½
Def. Ord. ...	57½	3½	3½	- ½
4% First Pref. ...	68½	55½	56½	- ½
4% Second Pref. ...	35½	28½	30½	- ½
5% Red. Pref. (1955) ...	102½	97½	101	- ½
4% First Guar. ...	105½	96½	101	- ½
4% Second Guar. ...	95½	88½	95	- ½
3% Deb. ...	88½	80½	85½	- ½
4% Deb. ...	110½	103½	106½	- ½
5% Red. Deb. (1947) ...	105½	101½	101½	- ½
4½% Sinking Fund Red. Deb. ...	107	104½	104½	- ½
SOUTHERN				
Pref. Ord. ...	80½	71½	77	- ½
Def. Ord. ...	26½	23	24½	- ½
5% Pref. ...	122	113½	117½	- ½
5% Red. Pref. (1964) ...	117½	112½	115½	- ½
5% Guar. Pref. ...	134	125½	132½	- ½
5% Red. Guar. Pref. (1957) ...	115½	112½	114½	- ½
4% Deb. ...	118	110	115½	- ½
5% Deb. ...	135½	127	135	- ½
4% Red. Deb. (1962- 67) ...	111½	107½	110½	+ ½
4% Red. Deb. (1970- 80) ...	112	108½	111½	+ ½
FORTH BRIDGE				
4% Deb. ...	107	103	105	- ½
4% Guar. ...	106½	102	105	- ½
L.P.T.B.				
4½% "A" ...	125	119	122½	- ½
5% "A" ...	133½	128	132½	- ½
3% Guar. (1967-72) ...	99½	98	99	- ½
5% "B" ...	124½	118½	123½	- ½
5% "C" ...	72½	64½	65½	- ½
MERSEY				
Ord. ...	35½	33	36	- ½
3% Perp. Pref. ...	72	66	70	- ½
4% Perp. Deb. ...	105	103	106	- ½
3% Perp. Deb. ...	85½	79½	84	- ½
IRELAND*				
BELFAST & C.D.				
Ord. ...	9	6	6½	- ½
G. NORTHERN				
Ord. ...	33½	19	26½	- ½
Pref. ...	49	37	43½	- ½
Guar. ...	70	57½	69	- ½
Deb. ...	90½	81½	92	- ½
IRISH TRANSPORT				
Common ...	—	—	71	+ ½
3% Deb. ...	—	—	99	- ½

* Latest available quotation

OFFICIAL NOTICES

CONSULTING ORGANISATION requires Public School man with University degree possessing experience of executive management and a knowledge of modern production methods. High salary and permanent position offered with excellent prospects.—Full particulars of age, positions held, dates and salaries to be sent, in confidence, to Box 213, c/o *The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

FIRM of Mechanical Engineers wants to extend its activities into the railway field and is looking for a qualified Mechanical Engineer to act as Liaison Engineer between the Company and the Railway Companies. Only first class applicants need apply for this permanent position. Appointment would be made immediately or, if applicant is not available immediately, as soon as restrictions on employment are lifted. Write to Box No. 64, *The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

DISTRICT ENGINEER required for Palestine Government Railways for two years, with prospect of permanency. Candidates should be A.M.I.C.E. or hold equivalent qualifications and should have had at least three years railway experience, as an executive engineer. Salary £P.800 rising to £P.1,000 a year. Expatriation allowance £P.150. Family allowance between £P.2.235 and £P.5.960 a month, according to number of children. Free passages and liberal leave on full salary.

Applicants should write, quoting E.1511A, to the Ministry of Labour and National Service, Appointments Dept., Central (T. and S.) Register, Room 5/17, Sardinia Street, Kingsway, London, W.C.2, for the necessary forms, which should be returned completed on or before 9th April, 1945.

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is 9.30 a.m. on the preceding Monday. All advertisements should be addressed to:—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

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(£28,325,000), a decrease of \$192,000, and the net earnings of \$3,096,000 (\$5,549,000) were \$2,453,000 lower.

District Engineer Required.—A district engineer is required for the Palestine Government Railways for two years, with prospects of permanency. For full particulars of this appointment see Official Notices.

Egyptian Delta Light Railways Limited.—It is announced that coupon No. 95, due April 1, 1945, on the 5 per cent. debentures of the Egyptian Delta Light Railways Limited, should be lodged at the Bank of England, London, E.C., for payment.

Cincinnati Centreless Grinders.—We are informed that British-built "Cincinnati" Nos. 2 and 3 Centreless Grinders are available, with standard attachments, for early delivery. Application should be made direct to Cincinnati Milling Machines Limited at Woodlands Farm Road, Tyburn, Birmingham.

Vokes Limited.—Speaking at the annual meeting of Vokes Limited, held recently at Guildford, Sir Ian Stewart Richardson, Bt., the Chairman, said the company was in a fortunate position in so far as its wartime activities were similar to its peacetime production. Experience

had been accumulated which would prove a great asset in future planning. Mr. Cecil Gordon Vokes, A.M.I.Mech.E., the Managing Director, said he believed that scientific filtration would play an important part in post-war industry. He made special reference to the importance of Britain's export trade.

Associated Electrical Industries Limited.—The net profit of Associated Electrical Industries Limited for the year ended December 31, 1944, after providing for depreciation and taxation, was £467,543 (£459,971). The dividend, less tax, on the ordinary stock was at the rate of 10 per cent. (same).

Hadfields Limited.—The net profit of Hadfields Limited for the year ended December 31, 1944, after provision for taxation, was £200,443 (£192,679). The amount brought in was £797,867 (£733,237). The final ordinary dividend was 15 per cent. (same), making 22½ per cent. (same) for the year. The amount carried forward was £870,261.

The Metropolitan Railway Surplus Lands Co. Ltd.—The net profits of the Metropolitan Railway Surplus Lands Co. Ltd. for the year ended December 31, 1944, amounted to £43,489 (£37,000). The divi-

dend was 1½ per cent. (1 per cent.). The amount carried forward was £7,796 (£11,422).

Metropolitan Assented Stock.—The trustees, Glyn, Mills & Co., announce that interest on Metropolitan Assented Stock for the year ended December 31, 1944, will be paid at the rate of 3½ per cent. (less tax) on April 5, 1945.

Grand Union Canal Company.—It is announced that the Grand Union Canal Company is to pay the full dividend of 6 per cent. on the £400,000 preference stock for the year ended December 31, 1944. This compares with the 3 per cent. paid for each of the years 1942 and 1943.

Coventry Gauge & Tool Co. Ltd.—The net profit of the Coventry Gauge & Tool Co. Ltd. for the year ended August 31, 1944 is £27,753 (£24,021). Add balance brought forward £85,098 (£79,892). The dividend is 7½ per cent. (same) and the bonus 7½ per cent. (same), both free of tax. The amount carried forward is £94,041.

British Insulated Cables Limited.—The trading profit of British Insulated Cables Limited for the year ended December 31, 1944, was £897,485 (£940,539). The total profit for the year, including dividends on investments, was £1,106,358 (£1,130,253). The final dividend on the ordinary stock was 10 per cent. (same), together with a cash bonus of 5 per cent. (same), making 20 per cent. for the year.

Trent Motor Traction Co. Ltd.—The net profit of the Trent Motor Traction Co. Ltd., a subsidiary of B.E.T. Omnibus Services Limited, the L.M.S.R. and the L.N.E.R., jointly, for the year ended December 31, 1944, was £84,470 (£73,725). The final dividend on the ordinary shares was at the rate of 6 per cent., making 10 per cent. for the year (same). The amount carried forward was £36,789 (£26,348).

New L.N.E.R. Hotel for Aberdeen.—The L.N.E.R. Palace Hotel at Aberdeen, destroyed by fire in October, 1941, is to be rebuilt. It is intended that the appearance of the new hotel shall be in keeping with the City's high architectural standard and that the interior will be up-to-date in design, decoration and equipment. It will contain 108 bedrooms, each with its own private bathroom, and in addition to the usual public rooms there will be a cocktail bar, ballroom, reception rooms, private sitting rooms and stock rooms for the display purposes. Air conditioning plant will be installed and bedrooms will be heated by the panel radiator system.

From April 1, the address of the London Sales Office of I.C.I. Leathercloth Division (Rexine) is Belmont, The Ridgeway, Mill Hill, N.W.7. The telephone number is Mill Hill 3600.

Bravery Award for Southern Railway Ganger



Ganger T. Coleman (left), of Bosham, receiving from Colonel Eric Gore Browne, Chairman, Southern Railway Company, the Carnegie Hero Fund Trust's parchment for brave conduct, at a recent ceremony at Charing Cross Hotel (see our March 16 issue). On the right is Sir Eustace Missenden, General Manager, Southern Railway

Railway Stock Market

Reaction of stock markets to the sensational war news has been wholly favourable, although the volume of business generally remained on the small side. British Funds developed further strength, and leading industrial shares showed small gains where changed, and there was further speculative activity in European bonds. Argentine rails were the most prominent section among railway stocks, prices generally showed response to Argentina's belated declaration of war against the Axis. Current views of Argentine rail stocks were mentioned in these notes towards the end of last month. Recognition that the railways must play an important part in the future development of the Republic, and hopes of better post-war results, also induced a little buying, but the stocks were mostly held very firmly, particularly the debentures, which have shown gains of several points. Although the post-war rehabilitation of Europe is bound to lead to increased demand for Argentine products, there is little prospect of resumption of ordinary dividends until the railways receive a fair deal from the Argentine authorities. Possibly over a period there may be scope for good appreciation in prices of ordinary stocks, but they must be considered as carrying a good measure of speculative risk. On the other hand, many of the debentures have investment merits, combined with possibilities of satisfactory capital appreciation. Despite the advance of 5 points during the past week at 66, Buenos Ayres Great Southern

4 per cent. debentures, for instance, still yield over 6 per cent.

Home rails, after showing a better tendency, eased slightly on the wages demands, but later became steadier, with prior change and senior preference stocks inclined to be firmer on the view that, bearing in mind the good yields, these stocks are likely to be in better demand when additional money is released by the big Australian conversion operation. Political and other uncertainties rank the ordinary stocks as speculative, although it would seem that the large yields suggest that an unjustifiably pessimistic view of the outlook is being taken. The disposition now is to assume that the next really important development likely to influence the home railway market is the result of the General Election.

Compared with a week ago, Great Western at 58½ has been well maintained, and the guaranteed stock at 132 and the 4 per cent. debentures at 116 were unchanged, and the 5 per cent. preference strengthened from 117½ to 118. L.M.S.R. at 29½ was the same as a week ago; the 4 per cent. senior preference firmed up from 76½ to 76½ and the 1923 preference was maintained at 58½. L.N.E.R. first and second preference have been well maintained at 56½ and 30½ respectively. L.N.E.R. first guaranteed kept at 101 and the second guaranteed at 95½. Among Southern stocks, the preferred at 77 has been well maintained, but the deferred was slightly down on balance at 24½, compared with 24½ a week ago; the 5 per

cent. preference firmed up from 117 to 118. London Transport "C" at 65½ failed to regain an earlier small decline.

The rise in Argentine rails has been general and tended to be accentuated by the fact that stock has been in small supply. Buenos Ayres Great Southern was 12½ compared with 11 a week ago, the 5 per cent. preference 27, compared with 25, and the 4 per cent. debentures 66, compared with 61. Buenos Ayres & Pacific strengthened from 5½ to 6½, and the consolidated debentures from 54 to 56. Buenos Ayres Western moved up from 10½ to 11½, and the 4 per cent. debentures from 53 to 56. Central Argentine was higher at 9½, the 4 per cent. debentures moved up from 53½ to 56½ and the 5 per cent. debentures from 61½ to 66. In other directions, Antofagasta issues continued in favour, the ordinary improving further from 10½ to 11 and the preference stock from 42 to 42½. San Paulo eased fractionally at 52, but United of Havana 1906 debentures became firmer at 24½.

After a further general advance, French railway sterling bonds eased, sentiment being disappointed at the absence of any reference in the Anglo-French financial agreement to interest resumption on these bonds. Later, however, they became steadier on talk of a forthcoming statement as to resumption of the bond service. In other directions, Canadian Pacifics have shown small fluctuations around 15.

Traffic Table and Stock Prices of Overseas and Foreign Railways

Railways	Miles open	Week ended	Traffic for week		No. of Weeks	Aggregate traffic to date			Shares or Stock	Prices							
			Total this year	Inc. or dec. compared with 1942-3		Totals		Increase or decrease		Highest 1944	Lowest 1944	April 3, 1945	Yield % (Notes)				
						1943-4	1942-3										
South & Central America	Antofagasta (Chili) & Bolivia	834	25.3.45	£ 33,090	+	£ 6,150	12	£ 367,820	£ 344,250	+	£ 23,570	Ord. Stk.	13½	9½	11	Nil	
	Argentine North Eastern ...	753	24.3.45	18,780	+	1,907	38	751,587	616,453	+	135,134	"	6½	4½	7	Nil	
	Bolivar ...	174	Feb., 1945	4,995	—	263	8	—	—	—	—	6 p.c. Deb.	18½	7½	7½	Nil	
	Brazil ...	—	—	—	—	—	—	—	—	—	—	Bonds	19½	15	21	Nil	
	Buenos Ayres & Pacific	2,773	24.3.45	176,667	+	31,333	38	5,451,267	4,476,134	+	975,133	Ord. Stk.	71½	31	61	Nil	
	Buenos Ayres Great Southern	5,080	24.3.45	244,667	+	4,534	38	8,444,934	7,756,600	+	688,334	Ord. Stk.	14½	9½	12½	Nil	
	Buenos Ayres Western	1,924	24.3.45	87,000	+	15,800	38	2,884,334	2,395,400	+	488,934	"	13½	9½	11½	Nil	
	Central Argentine	3,700	24.3.45	196,940	+	6,107	38	7,345,556	6,424,213	+	921,343	"	10½	6½	9½	Nil	
	Do.	—	—	—	—	—	—	—	—	—	—	Dfd.	4½	3	4½	Nil	
	Cent. Uruguay of M. Video	972	17.3.45	34,247	+	1,562	37	1,253,645	1,273,301	—	19,656	Ord. Stk.	54	4	5	Nil	
	Costa Rica ...	262	Jan., 1945	25,556	+	2,891	30	146,887	152,859	—	5,972	Stk.	17½	14½	16	Nil	
	Dorada ...	70	Feb., 1945	26,677	+	5,005	8	58,605	47,692	+	10,913	1 Mt. Deb.	101	101	98½	£6 10	
	Entre Rios	808	24.3.45	25,733	+	3,207	38	1,001,373	846,373	+	155,000	Ord. Stk.	64	43	5½	Nil	
	Great Western of Brazil	1,030	24.3.45	26,800	+	2,500	12	333,000	291,600	+	41,400	Ord. Sh.	38½	23½	26½	Nil	
	International of Cl. Amer.	794	Jan., 1945	\$185,167	—	\$25,877	1	\$185,167	\$211,044	—	\$25,877	—	—	—	—	—	Nil
South & Central America	Interoceanic of Mexico	22½	Feb., 1945	5,023	—	2,592	8	10,517	14,255	—	3,738	1st Pref.	1½	½	1	Nil	
	La Guaira & Caracas...	1,918	24.3.45	44,865	+	572	12	547,490	525,712	+	21,778	5 p.c. Deb.	88	79	78½	£6 7 5	
	Leopoldina ...	—	—	—	—	—	—	—	—	—	—	Ord. Stk.	5½	4½	4	Nil	
	Mexican ...	483	21.3.45	ps. 617,600	+	ps. 225,200	12	ps. 6,789,900	ps. 4,662,100	+	ps. 2,127,800	Ord. Stk.	—	—	—	Nil	
	Midland Uruguay	319	Jan., 1945	18,823	+	2,142	30	119,654	120,147	—	493	—	—	—	—	Nil	
	Nitrate ...	382	31.3.45	8,447	—	933	13	36,225	53,480	—	17,255	Ord. Sh.	75/10	65/10	71/3	£3 10 2	
	Paraguay Central	274	23.3.45	£61,756	+	£5,359	38	£2,256,878	£1,949,092	+	£307,806	Pr. Li. Stk.	79½	68	77½	£7 14 9	
	Peruvian Corporation	1,059	Jan., 1945	145,653	+	34,209	30	914,951	748,631	+	166,320	Pref.	9	10	9½	Nil	
	Salvador ...	100	Jan., 1945	c 193,000	—	—	30	c 751,000	c 796,000	—	c 45,000	—	—	—	—	—	Nil
	San Paulo ...	153½	—	—	—	—	—	—	—	—	—	Ord. Stk.	57½	46	51½	£3 17 8	
	Taltal ...	156	Feb., 1945	2,085	—	2,475	34	20,045	45,270	—	25,225	Ord. Sh.	21/3	13/9	12/6	Nil	
	United of Havana	1,301	24.3.45	77,564	—	8,621	38	2,016,949	2,067,175	—	50,226	Ord. Stk.	4	2½	2½	Nil	
	Uruguay Northern ...	73	Jan., 1945	1,634	+	272	30	10,521	10,078	+	443	—	—	—	—	—	Nil
Canada	Canadian Pacific ...	17,028	21.3.45	1,170,200	—	18,800	11	12,878,800	13,048,200	—	169,400	Ord. Stk.	17½	13½	15½	£6 12 9	
	Barsi Light ...	202	Feb., 1945	20,220	—	4,467	44	243,080	237,600	+	5,480	Ord. Stk.	129½	97½	127½	£3 10 7	
Various	Egyptian Delta ...	607	20.2.45	195,282	—	252	47	612,455	524,093	+	88,362	Pr. Sh.	7½	5½	7	Nil	
	Manila ...	—	—	—	—	—	—	—	—	—	—	B. Deb.	63½	58	62½	Nil	
	Midland of W. Australia	277	Jan., 1945	19,645	—	7,632	31	139,946	223,920	—	83,974	Inc. Deb.	101½	99½	96½	£42 11	
	Nigeria ...	1,900	25.11.44	374,576	—	59,634	4	—	—	—	—	—	—	—	—	Nil	
	South Africa ...	13,301	24.2.45	1,008,304	+	134,909	47	43,878,233	39,571,258	+	4,306,975	—	—	—	—	—	Nil
Various	Victoria ...	4,774	Nov., 1944	1,307,642	—	35,856	—	—	—	—	—	—	—	—	—	Nil	

Note. Yields are based on the approximate current price and are within a fraction of ½. Argentine traffic is given in sterling calculated @ 15 pesos to the £.

† Receipts are calculated @ 1s. 6d. to the rupee